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THE CONTAGIOUSNESS OF TUBERCULOSIS.

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THE facts with regard to the contagiousness of Tuberculosis which I have presented to the Academy of Medicine, and the objections which have been offered with regard to them since, induce me to explain the programme I had drawn up four years ago, and which comprises, up to the present time, more than two hundred and twenty-five experiments. I had more particularly in view the contagious nature of the malady, and the dangers it offers from a hygienic point of view.

When I commence the study of a contagious disease, my first preoccupation is to find the species of animal in which it may be developed most certainly and rapidly. This is the reason why, in studying Tuberculosis, I was led to employ the rabbit, pig, and cat. It is for the same reason that experimenters, in studying Anthrax, have also had recourse to the rabbit, although it is extremely rare to meet with spontaneous outbreaks of the disease in this creature. And it is the same with the pig, with regard to Tuberculosis; but I have been able to note that this disease as certainly kills the two species as Anthrax does the rabbit.

I believe that the susceptibility of the human species is still greater, and I think it very probable that if children, or even adults, were inoculated with Tuberculosis very few would escape infection.

A disease which kills one-fifth of a species is certainly a disease of that species. Tuberculosis is really a disease of mankind, and when it is present in the form of germs in a good portion of the food we consume, surely it does not savour of temerity to ask that sufficient hygienic conditions should be maintained to prevent this enormous mortality.

Tuberculosis of man is exactly the same as that of the ox and cow. When it is conveyed to animals by inoculation, it produces absolutely the same kind of lesions, is capable of transmission to other animals, and is constantly reproduced in the same form. Of this I have assured myself, by causing animals to eat tuberculous matter derived from man, or in inoculating them with his blood. Like the Tuberculosis of the cow, that of man is inoculable through the digestive canal, by blood and secretion fluids, and it always presents identical characters.

To this it is objected, it is true, that Tuberculosis is also produced by the inoculation of inert matters. But explanation is necessary here. It has been proved by many pathologists, that we can, almost at will, produce similar lesions to those of Tuberculosis. I have myself seen very marked instances of this kind. But this disease which is so easily induced, cannot be reproduced by inoculation with the tubercles thus obtained.

These experiments only prove one thing, and that is, that the *histologic lesions* by which Tuberculosis can be characterised are not sufficient. With regard to determining in this way that it is true Tuberculosis, capable of being indefinitely inoculated, I deny it; this experimental Tuberculosis remains an *artificial* disease. True Tuberculosis, no matter whether derived from man, the cow, pig, or rabbit, can be reproduced in an infinite series, constantly, *with absolutely identical characters*, and passes from *animal to animal* without being impaired in virulency. Nay, more, it becomes all the more energetic and rapid in its action, the more frequently it is inoculated. I could produce numerous facts in series, with pathological specimens to illustrate them. Thus, at the commencement it requires four or five months to kill a pig or rabbit by tubercule inoculation, but at the fifth series of inoculations two months suffice. General infection taking place at about thirty-five days, if at this period we kill the animal and

inoculate another from it, frequently this dies of the disease before the other would have done, if allowed to live.

It is particularly with Tuberculosis produced with cultivated virus that we find the greatest increase in virulence. The serosity from the caseous gland of a cat which had died as a consequence of injection of cultivated virus, was inoculated into six rabbits, and all of these became tuberculous. Forty days afterwards they already had pulmonary tubercles, with which six rabbits and a pig were inoculated. The latter died in fifty-seven days and one of the rabbits in sixty-eight days; and at this period the animals of the fifth series are more affected than those of the third. With the cultivated virus the fifth series are more abundant and more rapid than the first, the tenth than the fifth. It would appear that the microbium becomes acclimatised in the medium in which it is grown.

A rabbit which had received, five months previously, eight drops of the eighth cultivation in the jugular vein, died, and its lungs were found to be full of nodules (*granulations*), as were also the kidneys and spleen. I may also mention the case of a pig, inoculated with the vaccine cultivated on a tuberculous cow, and which, when killed, was a splendid example of generalised Tuberculosis.

ON THE LITERATURE OF "DISEASES OF THE ELEPHANT."

BY J. H. STEEL, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

(*Continued from p.* 192.)

THE great care exhibited by the elephant in securing a firm foot-tread has become almost proverbial, and he can only with the greatest difficulty be persuaded to cross any structure, such as a bridge, which he considers insufficient to support his huge weight. A large elephant weighs about 6,000 to 7,000 lbs. (4½ to 5 tons), and therefore, a bridge which will support him, is probably well fitted for ordinary army passage. "They cannot be made to crowd together. When loaded with baggage, an elephant occupies a space of 99 square feet, average weight 72 cwt., of which $\frac{4}{10}$ is borne on hind feet, which are 6½ feet from the

fore-legs. Unloaded elephants occupy 11 ft. by 5 ft." (Sir Garnet Wolseley). Experience would seem to indicate the inadvisability of forcing the animal to cross a structure which he seems to consider insecure. It is not the least remarkable proof of the tractability of this animal, that in spite of this instinct of self-preservation, he may be taught to walk on a tight-rope! In addition to irregularities of the ground, marching entails the passage of nullahs (rivers and streams), as well as traversing hard roads. The elephant revels in the water; he can wade across even a deep ford provided the bottom be good, but he crosses deeper rivers by swimming, his body being well down in the water, and only the end of the trunk out for breathing purposes, so that his driver (mahout) has to stand on his back (Knight). Ordinarily, his journeys are through otherwise trackless forests, in which he makes paths, the largest of the herd passing first through the jungle, and forcing his way by his immense weight, followed in Indian file by the rest.* His footing is in soft soil, or over accumulations of fallen leaves, and so the hoof slipper suffices to protect the sole. Nevertheless, in wild as well as tame elephants, this sole is sometimes penetrated by thorns, and Ouchterlony in his description of the structure of the foot, shows how these gradually become reduced in size as they are deeper penetrating, and he attributes this to a special fluid. Circumstances are very different with the transport animal worked along hard roads and over rocky ground. In a good working beast the lower margins of the toe-nails will be found worn, but on the march often this and the general wear of the pad lead to foot-soreness. Forsyth enters into particulars with regard to this. He tells us that it is necessary to protect the sole by "chóbing," applying a boiling-hot mixture resembling coal-tar (one ingredient of which is the gum-resin of the sáltree). This must be done twice annually to an elephant working regularly on hard ground. The price for the operation is about Rs. 2½. Gilchrist gives two recipes for the same purpose. Other forms of disorder of the feet are described by Gilchrist as Whitlow, of which Kándi affects the sole, being an ulceration which commences at the ground surface, but may burrow upwards

* I am told by a gentleman with some experience of wild elephants in native haunts, that when fleeing from danger, the female assiduously keeps the young *in front of her.*

and break out over the nail as a Quittor (Bumboode). It is attributed to cold, as from continuously marching over damp ground; pricks, as from the animal stumbling and bringing the foot down quickly on to a sharp-edged flint. In purchasing an elephant we should make it lie down and tap smartly all over the sole of the foot, for the dealers plug Kándi holes with great skill. This disease is very obstinate, and during treatment a leathern sole must be kept tacked by nails to the horn to protect it from dirt. Sájhan is Cracked Heel (Forsyth) at the junction of the horn with the ordinary skin. It is serious, as depending on the constitutional state, and recurring every rainy season; in its treatment the feet must be kept dry. Bruised Sole (Ouchterlony) results from the foot slipping on a rolling stone, and is denoted by the animal constantly soothing the inflamed foot with the trunk, and blowing water over it; occasionally mortification results, and the sole sloughs off. Sprains are comparatively rare. Thus the use of the elephant in campaigns entails serious injuries of the feet, frequently incapacitating him from progress. Occasionally these are produced by lazy or cowardly attendants, who want an excuse for not going forwards. However, with reasonable precautions, elephants have done good service even in hilly countries with hard soil, as Abyssinia. For working purposes an elephant should be full-grown (at least twenty years old, being in prime from thirty-five to sixty years); seven feet and upwards in height (East Indian Company's standard) taken at the shoulder, and sound. The age is to an extent shown by the teeth, but the size, state of the tail, and the condition of the ears and trunk assist us in judging. Thus the aged elephant has the end of the trunk mottled, and its bend worn and cakey (Ouchterlony), and "legs almost uniform in girth throughout. Instead of walking firmly, and planting the feet flat, he brings them to the ground somewhat in the manner of a plantigrade animal, touching with the heels first" ("Thirteen Years among the Wild Beasts of India"); the ears frayed and the top lapping over; wrinkled, shiny, and shrivelled skin; lean head; deep hollows above the eyes (Forsyth); the tail has little hair left on it, and is hard and caked, and the hairs found here and there over the surface of the body are worn short by friction. With regard to

size, the young at birth is about three feet high, and grows most rapidly at first; he attains his full size at about thirty-five years of age, before which he is said to be timid, and with slight powers of endurance. The tushes afford indications of age appreciable to the natives. The milk tusks are shed between one and two years of age and replaced by the permanent ones, which often attain seventy lbs. weight in the male. "The first set of grinders, or milk teeth, begins to cut the jaw for ten days after birth, and the grinders of the upper jaw appear before those of the lower. These milk grinders are not shed, but are gradually worn away during the time the second set are coming forward, and as soon as the body of the grinder is nearly worn away the fangs begin to be absorbed. From the end of the second to the beginning of the sixth year the third set come gradually forward as the jaw lengthens, not only to fill up this additional space, but also to supply the place of the second set, which are, during the same period, gradually worn away and have their fangs absorbed. From the beginning of the sixth to the end of the ninth year the fourth set of grinders come forward to supply the gradual waste of the third set. In this manner to the end of life the elephant obtains a set of new teeth as the old ones become unfit for the mastication of his food. The milk grinders consist each of four teeth or laminæ, the second set of grinders of eight or nine laminæ, the third set of twelve or thirteen, the fourth set of fifteen, and so on to the seventh or eighth set, when each grinder consists of twenty-two or twenty-three; and it may be added, that each succeeding grinder takes at least a year more than its predecessor to be completed"* (Corse, in Brewster's "Edinburgh Encyclopædia"). Gilchrist's ideas were much less exact than those of the experienced observer just quoted. He tells us that at about eighty years of age the front parts of the teeth —"eye teeth"—drop from the lower jaw. The elephant performs his work in numerous ways. He can drag timber and other weighty substances, but this soon tires him, as also does pushing. Evidently he is by conformation a beast of burden, and so, when called upon to push or drag, it should be only where great labour is required for a short time. The tusks are

* In extreme old age the molar teeth are worn level with the gum.

useful for lifting heavy weights, turning them over, or dragging them by means of ropes twisted round the tushes (Ouchterlony). Cases have been known of animals helping a comrade out of a hole by means of the tushes, and they certainly in nature are formidable offensive organs, and useful in digging up trees that the animal may obtain the soft roots as food, and for "tearing bark off trees, digging from banks the peculiar clay of which cattle are very fond, and prising down bamboos from clumps too thorny for use of the trunk, and for detaching earth and roots from tufts of grass and shrubs" (Ouchterlony). The same author says, "Sometimes they drag very heavy loads by means of the molars." He tells us that five miles a day, with frequent rests, is enough for an elephant drawing a heavy weight; but a loaded animal will, with its peculiar ambling pace, go fifteen to twenty miles *per diem* at three to three and a half miles per hour. The weight of the burden (fifteen to twenty cwt., exclusive of pad) was in Abyssinia 1,800 lbs., but some discretionary power was given to the officers in charge. An excessive load is apt to tire the animal too soon, make the feet sore, and cause stumbling. The shortness of the neck, straightness of the fore limbs, weight of the head, and flatness of the forehead, while they adapt the wild elephant to his duty of forcing a passage through the jungle, are utilised in getting him to push down walls, push weighty objects onwards, and press against a fallen comrade or obstinate camel until he is compelled to rise. When the tame elephant is used for these purposes the head should be protected by a shield, otherwise inflammation and sloughing of the skin of the forehead may occur, such as may also result from too great energy in the use of the aukuss or driving-spear by the mahout, which should only be used behind the ear, and of course not cruelly. In such cases the lining membrane of the facial sinuses may become involved in the inflammation. Gilchrist gives a detailed account of the method of fastening the pack-saddle of the elephant; while Forsyth impresses on us the necessity for having the pad of full size and well stuffed with grass, the felt cloth under this (gadéla) in good repair, and each renewed every year when a full amount of work is done. Galls of various kinds seem to be very common and obstinate, since they assume the form of

deep-seated abscesses with external hard swelling. They may have been caused by the mahout putting a stone under the saddle, or he may aggravate them. They are liable to heal superficially and then recur, so should be specially looked for in making a purchase. The howdah, or car, pad, and pack of the elephant require to be very firmly fastened, and in a special manner, or they will soon loosen and cause an accident, or gall the animal's back. It is a good plan to rub all parts liable to be galled with clarified butter (Forsyth).

The enormous weight of the elephant, which renders him difficult to transport by boat or rail, and the expense of keep and original cost, as also his liability to disorder, and the amount of care necessitated in his use, have considerably restricted the employment of the elephant for military purposes; but there are parts of the Indian Empire in which he can still be rendered extremely useful to an army for transport and commissariat purposes. Thus he will carry tents and other heavy *impedimenta;* also mortars and other guns; will often serve to free a gun or waggon fixed in mud, by his enormous weight pressing against it, and will prove very useful in bringing heavy building materials for fortifications, and siege-train guns, bridges, road-making, and so on. In a jungle country, too, he may be used as a pioneer and road-maker. He will, therefore, for a long time continue to be one of our army animals in spite of his not "standing fire," nor being useful in the exigencies of modern battle. Though no longer retaining his former proud position in the foremost line of the fight, but ignominiously replaced by bullocks before he reaches the line of fire, he still appears in gorgeous pageants of state, and proves useful in various ways to the sportsman. In selecting an animal for work Ouchterlony rejects African elephants as "all head and no barrel, and lacking the intelligence of the Indian," and they are not so tractable. He looks for medium height (7½ to 8 ft.), large broad back and barrel, massive head, and good open chest; a mukhna is the best, and a cow more satisfactory than a bull. The mukhnas are tuskless, or have imperfect tushes pointing downwards. "The natives fancy that there are two kinds of elephants—the gaja *berkampong*, those which always go in herds, and which are seldom mischievous,

and the gaja *salunggal*, or single elephants, which are much larger and ferocious, going about either singly or only two or three in a company" (Sir J. Raffles). These latter are most sought after by the hunters, they being the males expelled from the herd by some more powerful animal. The great drawback to the use of males is their liability to mustee or musthee, a peculiar sexual disturbance which comes on in certain seasons, and renders the animal unsafe and useless while it lasts. It occurs generally once a year, at no fixed time, but at the "rutting" season. It sometimes lasts several weeks, during which the elephant is violent, feverish, restless, and sleepless, and requires to be picketed apart from others. It seems to be aggravated by confinement, only occurs after the age of puberty (twenty-five or thirty years), and is associated with a brownish discharge from the must hole or ched on the temple, this opening being between the eye and ear on each side of the head, and giving passage to the secretion of the flattened gland lying underneath the skin of the temple on each side. It is stated that a similar sexual excitement is found, though less marked, in the female. Ouchterlony speaks of bleeding and castor-oil doses, but cautions against sedatives "which may stop the flow altogether, and cause lethargy, sinking, and collapse, and even death." Gilchrist hardly seems to favour interference with this peculiar physiological process; when it threatens, the animal must be at once secured by means of hobbles. It has been recommended to prevent mushtee by castration, or spaying, as it rather ought to be termed; but the intra-abdominal position of the testes, and the size of the animal, renders this a very formidable operation, and very frequently quite impracticable.

On the march, the skin of these animals should receive attention. In spite of its thickness, Ouchterlony found that it frequently bleeds under mosquito and gnat bites; in addition to the precautions already indicated in selecting a camping-place, a tree will afford a certain amount of protection, and a jhool or numda should be thrown over their backs on cold nights. Advantage should be taken of any convenient occasion to allow elephants to bathe, but they should never enter the water while heated.*

* The skin of the ill-cared-for domesticated elephant becomes harsh, with the cuticle much hypertrophied.

Anointing the skin with oily matter before the march will protect against heat or cold, for each of these influences may cause skin eruption and chapping. Gilchrist tells us that the best preventives of sore backs and sore feet are to dock the pay of the mahout while the animal is disabled, or give a reward for good service. The external ear and tail are sometimes the seat of progressive sloughing, preceded by ulceration of the investing integument. These are attributed to the sun's heat, but certainly complete sloughing of the tail seems rather an extreme result from such a cause, arguing rather an imperfect supply of nutritive fluid from some cause or other. We can only recall one parallel instance, the familiar one of the sloughing of the tail of domesticated monkeys, but it is said to affect elephants in good condition. Another skin disease, but probably dependent on disorder of the blood, is boils, which are often seen. They sometimes disappear spontaneously, but generally require to be opened, as they may otherwise remain for some time incapacitating the animal for work (Gilchrist). They are generally found on the head or thighs.

Besides Rheumatism, which principally affects the shoulder, three other blood diseases are recorded; of these Bloody Urine is mentioned by Gilchrist as being considered very fatal. He had not in 1841 seen any cases. Charbon, or Anthrax, of which the last disease is perhaps only one form, has received a fair amount of notice from Dr. Macdonald on the Tenasserim coast in 1839 (see his "Topographical Report to the Madras Medical Board"), and by V.-S. Frost, R.A., Rangoon (see VETERINARY JOURNAL, 1879). The following is the summary of the facts recorded by these gentlemen as we find it in our note-book.

V.-S. Frost's paper. *Post-mortem* examination No. 1.—Gelatinous effusion in axillary areolar tissue; anthracoid tumour (6 in. to 8 in.) in region of left parotid; effusion in gastro-splenic omentum; spleen ecchymosed, weight 37½ lbs. (5 lbs. being the normal); under surface of stomach, sub-lumbar and sub-penial areolar tissue laden with deposit; 34 to 40 oz. of serum in pericardium, of the colour of diluted venous blood; coagula in heart; gelatinous deposits and ecchymosis of heart.

Symptoms.—23rd. In morning lameness of left legs; refused food (?); no sleep.

24th. Left side apparently better, having been fomented; kept getting up and lying down; refused all food; slept a little that night. Given a cathartic, which acted slightly.

25th. Worse. Sat on haunches and bit the trunk. Died at 4.30 p.m.

Post-mortem examination No. 2.—Anthrax of bowels, and tumours against penis; blood in vessels fluid; spleen 24 lbs.; liver 61½ lbs.

Seen on 29th June at 9.30 a.m. Tumours cold and painless on incision; pulse 68; pupils dilated to full; breathing hurried; animal down and in great pain. This animal was at first lame of left hind leg.

On 28th ate charab; freely passed urine of white colour; at 9.45 also passed a glassful of dark watery excrement.

"Jolay," or Anthrax, is very common in British Burmah. The soil is retentive, and at the commencement of the monsoon vegetable decomposition is very active. The water is contaminated with every kind of filth, for surface drainage finds its way into the tanks. About thirty elephants daily washed in the tanks at which they were watered; natives also wash in it, and bullocks defecate in it.

The outbreak investigated by Dr. Macdonald is of a more doubtful character, and the *post-mortem* examination would lead us to think it more probable that he had to do with Pleuro-pneumonia Zymotica. The italics are our own, and indicate those passages seeming to support this view. The outbreak on the Tenasserim coast in 1839 assumed the epizoötic form. "It began in Moulmein, *after the mortality ceased among the bullocks*, some time in June. Previous to this elephants throughout the provinces died in immense numbers. *Post-mortem* examinations were made in many of these cases, and, save in two instances, when death appeared to be the result of Peritonitis (in one of which rupture into the abdominal cavity had taken place), all died of disease of the lungs in various stages of congestion and inflammation. In one case suppuration was present; in another tuberculous deposits; *generally one side of the chest*

only was affected, the other lung being fairly healthy. Among those who died in the first outbreak of the disease the lungs were absolutely black throughout their whole structure, more like the spleen, save in its tough membranous intersections, than the lungs. This was so general, that in our first examinations it was a matter of doubt what was health and what was disease; but in progress it was ascertained that the healthy lung is of a pale, fleshy, elastic, firm substance, while *the diseased structure showed every shade, from the florid appearance of active inflammation to the black apoplectic condition, this, when cut into, giving forth a frothy, purulent exudation.* The animals continued to work till the hour of their death." Thus we have a basis for doubts as to the nature of this outbreak, and it is a matter of great importance that we should know whether the elephant suffers from the Lung Disease of cattle, and whether it is intercommunicable between the two species; Foot-and-Mouth Disease is, according to the best authorities on the subject.

All authorities mention Zérbád as the most serious disease to which elephants are liable. There are said to be two forms, acute and chronic. The accounts of these differ somewhat, but it seems to some that at any rate one form of the disease has a specific character. This view is evidently well based on the following considerations. There is an incipient febrile stage; swellings appear in positions occupied by lymphatic glands, and subsequently extend. A fatal result sometimes ensues in thirty-six to forty-eight hours; in other cases progressive asthenia leads to paraplegia, and ultimately death. Generally several animals are simultaneously affected. The effused fluid is said to be capable of communicating the disease. Gilchrist mentions the occurrence of "blind boils" on the abdomen. Forsyth speaks of troublesome sores. The main symptom is anasarca, the accumulation of serous fluid below the trunk being sometimes very great, so that five gallons have been drawn off by tapping with a fleam, having a blade 1¼ in. wide, in twelve hours (Gilchrist). When such a condition occurs immediately after domestication, it is attributable to the debilitating effects of confinement and to errors in diet. Zérbád may be due to any weakening influence, such as parasites in the alimentary canal, overwork, etc.

Altogether there is much confusion in this matter; the evidence seems to point to three distinct conditions included under this heading, but careful observation and experiment alone can decide as to whether this view is correct.

1. Specific disease.
2. Acute Asthenia (Asl) (Forsyth).
3. Chronic Asthenia (Súkhá) (Forsyth).

The symptoms of the latter are gradually increasing debility; a dry, shrunken, and cracked skin; and progressive emaciation in spite of persistent appetite. It seems that the frequent occurrence of true boils is due to acidity of the blood.

The digestive apparatus being somewhat similar to that of the horse, we might anticipate a corresponding accordance of disorders, as, to an extent, is the case. Thus we find recorded Spasmodic Colic, with Intussusception in consequence; also Flatulent Colic and Enteritis—but are by no means prepared for Gilchrist's account of vomition, which seems to be frequent, although no medicinal agent is known to cause emesis in the elephant. But Watson reminds us that the œsophagus is markedly different from that of the horse, in being throughout composed of striated muscular fibre. The rejection of food is said to commence very suddenly, and be followed by paralysis of the œsophagus, which becomes inpacted with masticated food; and the animal, after several days' suffering, dies, and the gullet is found mortified along its obstructed portion. It is said to result from washing the animal when heated. Evidently we should be more fully informed concerning it.

The general symptoms of abdominal pain* are, restlessness, crossing the hind legs, lying and rising very often, lashing the sides with the tail, and opening the mouth very wide frequently. The bowels are generally torpid in simple Colic, rumbling violently in flatulency, and the dung slimy in inflammation, and

* V.-S. Powell observed the following symptoms in a case of Intussusception: Pain, shown by the animal resting one hind foot on the opposite leg, and passing his trunk into his mouth and gnawing it. On *post-mortem* examination he found Intussusception of the ilium for 22½ inches from against the pylorus; the bowel filled with firm fibrin, and parasites in large numbers in the large intestine.

these conditions Gilchrist seemed to consider diagnostic; he finds Enteritis most frequent in hot weather, and when the animal is worked much, and especially when he is fed on the peepul. The elephant is said to be very liable to atony of the bowels, such as gives rise to frequent attacks of Flatulent Colic.

But the most interesting resemblance between the disorders of the alimentary canal in the horse and the elephant, is to be found in the fact of each (in India) being frequently invaded by bots and amphistomes. The former, as found in the elephant, present some features of interest. We have observed them in large numbers, and have recorded the fact, that when separated from the mucous membrane they in some cases attached themselves to the hands of us who were making careful *post-mortem* examinations. It is interesting also to observe that undoubted ova are sometimes found deposited on the roots of the tusks of young animals, within easy reach of the tongue, protected from accidental removal by the ivory having been indented, from the action of the corrosive fluid ejected by the female œstrus with and around them.

The amphistomes have a much greater clinical importance, as entailing an annual loss of large numbers of elephants. This form is known as *Amphis Hawkesii* (Cobbold), and closely resembles *Amphis Collinsii*, found in the horse. Like that parasite, it occurs in large numbers in each host, and causes very considerable debility, and often death. It has a red colour, in consequence of the distension of its alimentary canal with the blood of the host, which it obtains by suction. Dr. Cobbold, however, does not attribute the same importance to it that we do, and denies its blood-sucking powers. The result of the presence of this parasite in large numbers is Zérbád, with violent purging. Like other ungulates, the elephant, when suffering from abdominal irritation and indigestion, eats earth*; but this symptom is very marked when the amphistomes are present. Gilchrist speaks of "a flat, circular worm, about the diameter of

* Under ordinary circumstances the elephant carefully removes earth which may be adhering to the roots on which he feeds by striking them against his fore-legs. This earth-eating habit is therefore the more remarkable. Animals which do not spontaneously free themselves from parasites get a bad name among the mahouts, and are said to "do" badly.

a silver two-anna piece, and of a reddish, fleshy colour, called mussoorie by the mahouts. It causes much irritation." But the description seems to refer to *Fasciola Jacksoni* (Cobbold).* Forsyth specifies the earth eaten as being "red coloured, and about ten to twenty pounds in weight." Gilchrist seems to think any kind of earth answers the purpose, and gives the amount as ten to twelve seers. In the cases observed by us the trunk was constantly gathering dust, and feeling for anything cold about the fittings of the animal's abode. They were not supplied with earth, which the mahouts consider should be allowed, and all died, though some were treated with enormous doses of astringents.

Gilchrist attributes the diarrhœa in these cases to the earth eaten, but in our cases earth was not freely taken, and the animals succumbed to superpurgation, the bowels, by the quantity of gelatinous deposit between their coats, giving clear proof of their high state of irritation.

Dr. Cobbold, in his excellent paper, has systematised our knowledge of the parasites of the elephant, and announces several new species obtained from the victims of the Saugar outbreak, investigated by V.-S. F. Smith and ourselves.

No other of the parasites which have been found seem to have much clinical importance.

Forsyth tells us that the eyes very readily sympathise with the digestive apparatus, any disorder of the latter giving rise to opacity of the cornea, which is also attributable in some cases to the heat of the sun—hence very few animals are seen with absolutely sound eyes. Conjunctivitis is also sometimes a cause of opacity.

(*To be continued.*)

* "Only a few years since I learned that large numbers of elephants perished from the 'Rot' in Burmah, and I am indebted to Mr. Thacker, V.S., of the Madras army, for specimens of the offending entozoön."—*Gobbold*, "*The Internal Parasites of our Domesticated Animals*," p. 13.

MUCO-GASTRO-ENTERITIS IN CALVES.

BY THOMAS CAMPBELL, M.R.C.V.S., VETERINARY INSPECTOR, KIRKCUDBRIGHT.

HAVING been much interested by the discussion upon "Tubercular Stomatitis" which recently took place in the pages of the VETERINARY JOURNAL, and having given the disorder considerable study and attention, perhaps the following remarks may not be considered unworthy a place in an early number.

The affection which I propose to describe under the name of "Muco-gastro-enteritis," in symptoms and other particulars, to my mind, is similar to, if not identical with, the disease termed "Tubercular Stomatitis" by Mr. Macgillivray.

Definition.—Inflammation of the mucous membrane and gastric follicles of the abomasum, the mucous membrane of the duodenum and, sometimes, implicating the whole mucous lining of the small intestine.

Symptoms.—Muco-gastro-enteritis is always associated with or follows that form of Diarrhœa in calves which is commonly known as "White Scour."

The subject of the following symptoms was a Galloway bull-calf, aged five months, and belonged to a prize stock. My patient was lying in a clean, well-ventilated calf-house, where its comfort was looked after with every care.

I was informed that the calf had been purging, more or less, for nearly eight days prior to my visit; that it had frequently suffered from an attack of Diarrhœa, which lasted, on an average, four days; that during the past two days it was observed that the animal was very dull, found constantly lying, discharging a profuse quantity of saliva, and that its breath was fœtid. I was also told that for some time before symptoms of sickness were observed, the calf had shown an inclination to lick the walls and a stone-trough, but had given up the practice seven days ago.

On examination I found the pulse 84, temperature 104·5°, respirations irregular, ears hanging, eyes dull and slightly lachrymose, the tip of the tongue protruded nearly an inch, the rumen distended with gas. Symptoms of cerebro-spinal derangement—rendered more apparent by elevating the head, when the animal

staggered. Breath fœtid, salivation profuse. At intervals of two minutes a regurgitation of fluid from the stomach to the mouth took place, causing the animal to extend his head as if about to ruminate. The extension was followed by a shake of the head, and a snort—marked indications of nausea; these symptoms were succeeded by a copious flow of saliva and two or three movements of deglutition. In the morning the calf had refused his milk, but when I saw him he seemed thirsty, and swallowed some with an apparent relish.

On the inside of each cheek I found a deposit of a whitish-yellow material, of the consistence of newly-separated curd, level with the free extremities of the papillæ. This deposit could be easily removed by the fingers; but this act was attended by bleeding from the papillæ. On the tip of the tongue was a deposit of a similar material to that found on the cheeks, if anything slightly firmer in consistence. On removing this patch, I discovered that the mucous membrane beneath had disappeared, as the red muscular fibres of the tongue were brought into view. On the dorsum of the tongue was seen a much larger patch, whose centre appeared convex.

From the general appearance of the animal, I did not entertain a hope of recovery, and having informed the owner, I killed the animal and proceeded to make a

Post-mortem Examination.—Having decapitated the animal, I opened the abdomen and found the small intestine contracted, and red in colour; the liver slightly anæmic, but otherwise healthy; kidneys and spleen normal. Rumen and reticulum healthy; the leaves of the omasum highly congested. The abomasum contained a large quantity of a greenish-coloured fluid, decidedly acid, and giving off an offensive smell. The surface of the mucous coat was variegated, from a bright scarlet to a purple, especially in the pyloric region. At some points the mucous and muscular coats were united by organisation of lymph effused between them; in other places, inflammatory exudate was found in appreciable quantities. The mucous lining of the duodenum was highly vascular, and its surface covered by a greenish-grey coloured gelatinous mucus. The other portions of the intestine and the thoracic viscera were healthy.

Having made a section of the tongue through the large

spot, I observed that absorption of the mucous membrane and subjacent tissues had taken place to the extent of one-fourth of an inch, the normal tissues being replaced by a straw-coloured substance resembling ordinary cheese curd. At my first visit I had thoroughly removed the deposit from this portion of the tongue, and yet in thirty-eight hours thereafter I found the fossa quite full, thus showing the rapid production of the curd-like matter.

Microscopic Anatomy.—To mount a section of the deposit is no easy task. I succeeded by freezing a specimen, of which I made several sections, but when placed under the microscope their structure I could not make out, and therefore had to employ a reagent to assist in rendering it more apparent. I tried acetic acid, which answered admirably. After many careful examinations under different objectives, of the sections from the tongue, I have come to the conclusion that the curd-like deposit is neither more nor less than coagulated saliva and mucus. Under a quarter-inch objective, one of the sections displays a conglomeration of cells, some quite distinct and well-formed, others broken.

Pathology.—In this affection the mucous membrane of the abomasum has lost its healthy pale-pink colour, and assumed a somewhat livid redness. After a certain time the gastric juice secreted is insufficient in quantity, and, as is evidenced by the offensive odour, indifferent in quality. An examination of the methods pursued by dairymen and stockbreeders in the rearing of calves, tends to throw some light on the causes of the disorder in consideration. The calf does not receive its mother's milk, but milk derived from an uncertain number of cows in different stages of lactation. The meconium is never perfectly removed, the stomach becomes distended and semi-paralysed; the gastric juice fails to act on the milk which, imperfectly digested, flows into the intestinal canal—a sour, and, in a measure, a poisonous fluid. Although digestion does take place in the first portion of the small intestine, its resources are overtaxed with the fluid which has escaped digestion in the stomach. The difficulty here is succeeded by irritation, which, in turn, is followed by diarrhœa.

The mouth lesions are symptomatic of a chronic attack, and I would explain their causation in this way:—The unhealthy

acid, acrid, and offensive fluid contents of the stomach are sent freely into the mouth by regurgitation; constant contact and mixing with the copious secretions of saliva and mucus in the mouth bring about a coagulation of the fluids; the coagulum is deposited on the cheeks and tongue, and its presence, by interfering with the natural functions of the parts, leads to absorption of the mucous membrane. Mr. Macgillivray says these ulcerous sores or excavations in the course of two days will, generally, be found quite filled up and covered with the same tough, cheesy-looking yellow material, which may have further invaded the healthy surrounding tissues.

The latter change, it must be allowed, points strongly to a sort of degeneration of the parts; but if so, what is the source of the cheesy substance which is so rapidly reproduced after removal? If the deposit is the product of gangrenous or tubercular degeneration, we should have a substance of an unmistakable character when examined microscopically, and any pathologist who has given morbid anatomy the attention it deserves, should at once be able to state if it is the products of tubercular degeneration.

I may mention that I have seen children who presented symptoms similar to those shown by calves when suffering from this disease. The whitish-yellow deposit was on the cheeks and tongue, and had to be frequently removed by means of a rough towel. This affection in children was not "Gangrenous Stomatitis," nor "Ulcerative Stomatitis" (*noma*), but a malady which yielded to simple treatment.

I have never met with this affection in an animal older than ten months; and I have never seen a horse so affected, and from the conformation of that animal's stomach, do not believe that he can so suffer.

I deny that this disorder of calves can have any connection with Tuberculosis. Tuberculosis is seldom seen in young subjects. During seventeen years practice in a county where Tuberculosis is very prevalent, I have only met with developed tubercle in one young animal, a calf, 10½ months, whose mother, shortly after parturition, died of Tuberculosis. Tuberculosis runs a slow but certain course. From the time an animal becomes infected, until the germs are developed, tubercles formed, and constitu-

tional disturbance well marked, many months, even years, may elapse. In fact, its progress and development has been so slow, that until quite recently Tuberculosis was not considered infectious or contagious. Ninety-five per cent of the animals affected with Tuberculosis, which have come under my care, were over four years of age and incurable. My experience of this scourge has been quite different from that of some recent writers, who find no difficulty in curing certain forms of the malady. If I were to accept the doctrine propounded by a writer in the *Veterinarian* for November, '81, under the heading of "Tuberculosis in Calves," I should necessarily expect that our bovine population would disappear as the cattle did—at a remote period—in Egypt.

Treatment.—Constitutional: in acute cases, give Aqua calcis and milk, Potass chlor. and charcoal, three times daily. In chronic cases—when the mouth is seriously affected—Aqua calcis and milk, linseed tea. Treatment of the mouth: remove the deposit carefully with a dry towel, then wash the parts with a weak solution of Zinci. chlor., or Potass permangan; afterwards wash with a solution of Sod. bibor. three times daily.

RHEUMATOID ARTHRITIS.

BY J. J. PHILIPS, M.R.C.V.S., A.V.D., BAREILLY, INDIA.

ON the 24th of October last, two horses of the H Battery, 5th Brigade, Royal Artillery, were reported lame—one a grey gelding, "Waler," age eight years, and the other a bay gelding, stud-bred, age fourteen years. The grey horse had been very slightly lame the previous day, but on this morning he was so very lame as to be unable to bear any weight on the leg, and I at first thought there was fracture of the humerus. However, upon further examination, I discovered the seat of the pain to be in the humero-radial joint, and as I could discover no outward mark of violence of any kind, nor had the animal had any unusual exercise, together with there being no enlargement of any kind, I looked upon the case as one of acute rheumatism of that joint. I was also led to that conclusion when I took into consideration the heavy dew and cold to which he was exposed; for at that time the whole of the horses of the Battery were

picketted outside the stables, which they have been all through the hot season, just now over; and evidently the somewhat sudden change of the night temperature affected him. The case of the bay horse was almost precisely similar, the only difference being that in his case no lameness was observed previous to the day on which I saw him, and the near stifle-joint was the seat of lameness.

Both patients were admitted into the infirmary at the same time, and died within twelve hours of each other. The same day these two horses were attacked, the whole of the horses, at my recommendation, were removed into the stables, and there has not since been any further departure from health. Mr. Poyser, of the Department, arrived at Bareilly on special duty the same day on which the grey horse died, and he saw both of these animals when they were in a dying state. He looked upon them at first as cases of paralysis. I am greatly indebted to him for his aid in making careful *post-mortem* examinations with me. Mr. Appleton, also of the Department, who arrived at Bareilly the following morning, as a member of the Annual Casting Committee, was present at the examination of both these animals, and saw the bay horse alive; his first impression was that these were cases of Anthrax, but both he and Mr. Poyser afterwards concurred with me in the diagnosis I had previously made. The following is from the record of treatment, as well as the *post-mortem* appearances of these cases, and I think they are singular and interesting, never, myself, having heard of or seen similar ones. Possibly they may be the means of throwing some little light on an obscure condition.

I much regret not having had a clinical thermometer, as the temperature of both patients was extremely high throughout.

CASE I.

October 24th, 1881.—*Rheumatoid Arthritis.*—Animal very lame off-fore, but fed well and appeared otherwise healthy. He was reported yesterday as slightly lame. I find animal evinces excessive pain upon the elbow-joint being manipulated, and he can bear no weight on leg. Foment the part with ext. Bellad. dissolved in water three times daily.

6 p.m.—In afternoon animal fell and did not rise for some

time, but when he did do so I had him moved into a loose box and well nursed. Animal ate well all his feed and grass to-day, as well as drank plenty of water. There is slight febrile disturbance, pulse being slightly above normal, mouth hot, extremities warm. Give ext. Bell. ʒj, Potass. Nit. ʒiv. in bolus.

October 25th.—8 a.m.—Patient is much worse this morning, and has not risen. Since he entered the box he spent a very restless night; pulse is not much above normal, extremities warm, visible mucous membranes slightly injected, no fæces have been passed since yesterday afternoon. Give Opii Pulv. ʒj, Calomel xxx. grs. in bolus.

6 p.m.—I have seen the animal several times during the day, and find he is decidedly worse; he is in great pain, is unable to rise, and has knocked himself about a great deal; no fæces have passed, the visible mucous membranes are much injected, mouth and extremities very hot, pulse nearly 60. There is slight fœter evolved from the mouth. Give Aloes ʒj in injection. Also give Opii Pulv. ʒj, Calomel xxx. grs., Potass. Nit. ʒiv. in bolus.

9.30 p.m.—The symptoms are intensified, pulse being about 80 and wiry. Mouth and extremities hot, membranes injected; no fæces have passed, and animal is suffering acute pain; there must be a paralysed state of the intestines. Animal has eaten fairly well during the day, and has been well nursed.

11 p.m.—Patient about the same. Give Opii Pulv. ʒij, Calomel xxx. grs., Potass. Nit. ʒiv. in bolus.

October 26th.—2 a.m.—Animal suffering great pain. Give ext. Bellad. ʒij, Antim. Tart. ʒss., Potass. Nit. ʒiv.

5 a.m.—No improvement. Give Opii Pulv. ʒij, Antim. Tart. ʒss., Potass. Nit. ʒiv. in bolus.

8 a.m.—Patient is gradually getting worse, and does not take anything except suttoo and water and a little Lucerne grass; pulse about the same, the fever symptoms have increased, and no fæces have passed, but some urine, although it was not observed at the time; the bedding only was wet.

11 a.m.—Animal sinking; pulse rather imperceptible, patient in great pain. Give ext. Bellad. ʒij, Potass. Nit. ʒiv. in bolus.

6 p.m.—Pulse imperceptible; animal is dying.

10 p.m.—Animal died.

CASE II.

October 24th.—*Rheumatoid Arthritis.*—Animal came into the infirmary lame in the near stifle, and suffering acute pain, but has been working and feeding well up to the present time. Upon pressure to the joint animal evinced great pain, but there is no swelling. Pulse accelerated, respirations normal, extremities warm. Animal has not fed well this morning. Foment with ext. Bellad. dissolved in water.

6 p.m.—According to the Farrier Sergeant's statement, the animal had a slight attack of colic in the afternoon, which was not reported to me until my evening visit. He gave Oleum Lini. Oiss, Sp. Æth. Nit. ʒiss., but no relief was given, and when I saw the patient he was suffering great pain, was down and unable to rise. Pulse accelerated, and symptoms of high fever. Give ext. Bellad. ʒj, Potass. Nit. ʒiv.

October 25th.—8 a.m.—Patient spent a restless night, and is decidedly worse; but with the exception of his being unable to use his hind-quarters, this case has been precisely similar to the preceding one, and the treatment has been the same.

October 27th.—11 a.m.—Animal died. The *post-mortem* appearances of this and Case I. are described together.

The most prominent pathological appearance on exposing the humero-radial articulation in the grey horse, and the femoro-tibial in the bay, was denudation of its articular cartilage to a varied extent, and in a less degree in the opposite parts of the humeral and femoral condyles. This demonstration consists of atrophy of the articular cartilage—a result of inflammation of the subjacent compact bony tissue, which upon section of the inner condyle of the femur presented irregular vascularity. In the parts affected, the articular cartilages were dark and thin, and a yellowish curdled *débris* occupied the base of the concavity. Some parts of the articular surfaces were comparatively unaffected to the naked eye. In all affected capsular cavities the synovia was extra viscid, yellow, and even red-tinged, and increased in quantity, whilst the synovial membranes nearest to the denuded parts, presented marked congestion. Some joints were not so affected as the knee in the grey horse, though all doubtless suffered more or less from acute rheumatoid arthritis. I did

not examine the joints of the feet of the grey, but I found all four coronal, navicular, and pedal bones of the bay in a congested state, although in the joints which they formed, I observed the articular cartilages less affected than in the other joints previously noted.

The whole of the thoracic and abdominal viscera presented a highly blood-gorged condition, accounted for, no doubt, by the persistent recumbent position of the patients.

On the 21st January, 1882, a third horse of the battery became attacked with this disease; the near hock being the chief seat of pain; the off one was also affected, though to a slight degree. Finding considerable disturbance of patient's system, I put him into slings in the evening of first day, and although I had a good deal of difficulty in moving him from the box he was in to the next box where the slings were, still I found that when the slings were properly adjusted, immediate marked relief was given; the breathing, which was before laboured, became at once tranquil. I had leeches applied to the hock-joints, and on the third day a cantharidine blister put on the near hock. Beyond anodyne fomentations for the first three days, and the administration of quinine three times daily, scarcely any medicine was used. The following table shows the variations of the pulse and temperature :—

JANUARY.	TIME.	PULSE.	TEMPERATURE.
22	10.0 a.m.	72	106
„	5.0 p.m.	76	106
23	10.0 a.m.	64	103
„	9.0 p.m.	80	106
24	10.0 a.m.	60	104
„	10.0 p.m.	68	104
25	10.0 a.m.	64	102
„	5.0 p.m.	68	104
„	9.30 p.m.	—	103
26	12.0 noon.	60	103
„	5.0 p.m.	64	102
27	10.0 a.m.	60	101
„	5.0 p.m.	60	100·4
28	9.0 a.m.	52	100·2

I had to return the thermometer on the 28th January, as it was borrowed, so could not note the temperature afterwards. Patient was convalescent on about the fourteenth day, and was removed from the slings ten days later, but on account of the subsequent debility, he was kept on the sick list for a month longer, when he was returned to duty and has done his work well.

On the 25th January, a fourth horse became attacked with Rheumatoid Arthritis, the near hock being the seat, but compared to the three previous cases this was slight, although the hock itself was very much swelled, and animal could with difficulty be moved into infirmary. I did not place this animal in slings, but otherwise, with the exception of the application of a blister to the hock, the treatment was exactly the same as in the preceding case, and animal was convalescent on the 10th day. The variations of the pulse and of the temperature were as follows :—

JANUARY.	TIME.	PULSE	TEMPERATURE.
25	10.0 a.m.	76	103
„	5.0 p.m.	72	102
26	12.0 noon.	64	101
„	5.0 p.m.	64	100
27	10.0 a.m.	50	100·3
„	5.0 p.m.	48	99·4
28	9.0 a.m.	48	99·2

NOTE ON GLYCO-TRAGACANTH EXCIPIENT.

BY "PHARMACON."

THE object of the following note is to bring more generally before the profession what the writer believes to be one of, if not the best combination, as an excipient for general use. It is not introduced as a new preparation, as for some years it has been extensively employed in pharmacy, and the writer has used it since 1876. But judging from his experience and conversations with many veterinary surgeons in different parts of the country,

and its absence from our text-books, he is led to believe that it is by no means generally known or used in veterinary pharmacy.

Few practitioners, who have had much experience in the art of compounding medicines, will have failed to notice how very unsatisfactory the excipients in general use in many cases are; and often it is impossible to select one suited to the particular preparation under manipulation from the list given in our text-books, and taught at the different schools.

In keeping with the object of this paper, no attempt will be made to enumerate its advantages or discuss the various conditions under which it can be advantageously used, as this would necessitate a somewhat lengthly article. I shall therefore proceed at once to state its composition, and leave its merits or demerits to the judgment of those who may employ it. It consists of powdered gum tragacanth, glycerine and water, the proportions depending in some measure on the particular ideas of the dispenser. The following is one formula which the writer uses:—℞ Pulv. Tragacanthæ ʒiss.; Glycerini ʒij.; Acquæ ʒiij. Stir the tragacanth with the glycerine, then add the water and stir till thoroughly mixed. It may be used immediately after mixing, but is better left for twenty-four hours to gelatinize.

It will be found in practice advisable to keep two forms prepared—one a tolerably stiff paste, and the other softer. The above formula might be taken as a guide; if a stiffer paste be required, increase the tragacanth; if a softer, increase glycerine and water. If required to be kept for some time, the addition of a few drops of some essential oil, as oil of cloves, will enhance its keeping qualities.

A tolerably stiff paste will be found most suitable for masses containing metallic salts, such as the sulphate of iron, etc.

Comparatively, it requires but a small quantity of this excipient to give the proper consistence, and the inexperienced will often be surprised how little is sufficient to render tractable the most unpromising mass.

Editorial.

THE ETIOLOGY OF TUBERCULOSIS.

THE great interest that is centred in everything relating to the more serious transmissible maladies of man and animals, is being continually increased by successful investigations into their etiology and the results of their experimental production. Until recently, Anthrax has attracted the largest share of attention, from the now well-established fact that not only is this very fatal disorder due to the presence of a micro-organism, named a *bacterium* or *bacillus;* but also that, by artificial cultivation, this organism could be so modified that, when introduced into the body of a healthy animal, it does not produce the deadly Anthrax, but perhaps an ephemeral and trifling disturbance, which leaves the creature absolutely protected from future infection. This startling result was preceded by the discovery of the infecting organism, and it gave rise to the expectation that in all other transmissible diseases a similar agent would be discovered and as successfully utilized. Not long ago our colleague, Professor Toussaint, of the Toulouse Veterinary School, announced that he had found the disease-producing organism of Tuberculosis; but his statement was received with somewhat of incredulity. As to the infectiveness of the disease, there has been no doubt whatever for some years, thanks to the exhaustive researches and experiments of many veterinary surgeons on the Continent, who have made this subject particularly their own. So it only remained to search for and isolate the germ, and, by cultivating it, attempt to protect creatures from the far too common and fatal scourge.

Among those who have entered the field, possessed with this idea, is Dr. Koch, of Berlin, who has at last been fortunate in finding a bacillus of a particular form, and with certain peculiarities which appear to distinguish it from other bacilli. The discovery was not made without much trouble and the exercise of much skill and patience. By a somewhat intricate and delicate process (though this to the practised microscopist is not necessary), the tubercle-matter is made, by staining, to exhibit the bacilli perfectly distinct in its midst: appearing as minute thin rods, less than half the diameter of a blood corpuscle in length, most numerous in recently formed tubercle, and apparently having some special relation to the so-called giant-cells, in the interior of which they are often found—sometimes as many as twenty rods in one cell. Staining is not absolutely necessary to show their presence, as they can be seen in a small portion of tubercle placed in blood serum or in distilled water in a hollow slide. Koch found this bacillus in ten cases of Tuberculosis, and in three cases of Bronchiectasis of cattle, a scrofulous or cheesy gland in a pig, in a tuberculous fowl, in three monkeys, nine guinea-pigs, and seven rabbits, which had perished from Tuberculosis; and in 172 guinea-pigs, thirty-two rabbits, and five cats, which had been experimentally inoculated.

To prove that the disease resulting from inoculation with tuberculous matter containing these organisms was not of spontaneous origin, Koch

adduces the following results :—When Tuberculosis is spontaneous the tubercles are not so rapidly developed; creatures into which matter containing no bacilli was inoculated did not suffer from the disease; and, in the spontaneous form, the bronchial glands first became enlarged and caseous before the lungs were affected. In the inoculation experiments, when the abdomen was the seat of operation, the lymphatic vessels and inguinal glands, in immediate proximity to the point of inoculation, first became affected. Only matter containing the living bacilli was effective in producing the disease; when it did not contain these bacilli, or their spores, the result was negative. By separating the bacilli from the tuberculous matter, by cultivating or growing them in solidified blood-serum through a number of generations, it was found that, when inoculated free from all the other materials which enter into the composition of tubercle, they produced Tuberculosis as certainly as if the fresh matter had been employed. A large number of experiments were performed to prove this, and it was also ascertained that the number of bacilli introduced had everything to do with the rapidity of development of the disease, which was also most rapid and extensive when they were introduced into the abdominal cavity or veins. The tubercles so produced differed in no respect from those seen in spontaneous Tuberculosis, or when the disease is produced by inoculation with tuberculous matter.

So far, the evidence seems clear that the parasitic nature of Tuberculosis is ascertained, and the next step is to apply this knowledge to the prevention of one of the most widespread and destructive diseases which affects mankind, as well as animals, and is apparently on the increase.

INOCULATION AS A PREVENTIVE OF PLEURO-PNEUMONIA.*

BY R. RUTHERFORD, M.R.C.V.S., EDINBURGH.

In considering the value of the practice of inoculation for the prevention of that malady in cattle known as "Contagious Pleuro-pneumonia," it would seem to me to be advisable to do so from two points of view, a scientific and an economic, the latter especially,—for it is not only necessary that the operation be sound in principle, it must be practicable to be of value at all, and must in results, favourable or otherwise, be able to bear the crucial test of comparison between it and any other mode of dealing with the disease. How far inoculation can answer these requirements I shall endeavour to show.

The practice of inoculation for the prevention of Pleuro-pneumonia is now about thirty years old. It is based upon the now generally accepted theory of the disease being an eruptive fever, one of a group, some of which are common to man and some to the lower animals. Or to put it more plainly, Pleuro-pneumonia is not, from a pathologist's point of view, what at first sight it would appear to be, and what for a long time it really was considered, viz., "a disease of the lungs simply," analogous, for instance, to Pleuro-pneumonia in the horse, or to the same disease sporadically occurring in cattle, diseases which have their origin in causes which are ordinary and

* From the Journal of the Highland and Agricultural Society.

quite remote from the causes of the epizootic malady; but a contagious eruptive fever, of which the changes that take place in the lungs are a symptomatic feature.

The fever is the disease, the lung-changes a result, in the same way that in Variola, or Smallpox, there is firstly the Variolous Fever, then the succeeding eruption on the skin. In the former Nature does her best to throw the disease off through the lungs, in the latter through the skin.

Perhaps the greatest triumph of medicine (vaccination excepted) was the discovery of inoculation, which, prior to its introduction into this country by Lady Montagu, had long been known and successfully practised in the East. Applied to man the operation technically means the imparting of Smallpox to a previously healthy person, by introducing the specific virus of the disease into the system through an incision or puncture in the skin, the result being Variola or Smallpox of a type milder, and the occurrence of which practically gives exemption from an attack of the true disease. Applied to cattle, the operation of inoculation means the introduction into the system through an opening of the skin of the specific virus of Contagious Pleuro-pneumonia, the result being a mild degree of fever, with certain phenomena of an eruptive character at the seat of the operation, the occurrence of which also gives exemption from the true disease.

So far the operation in man bears a resemblance to that in cattle, but no further; for between the two there is this great distinguishing difference,—the artificially induced disease in man is contagious, whereas it has been clearly and indisputably shown, and placed beyond all doubt, that the conditions, the disease, produced by inoculating healthy cattle with the virus of Pleuro-pneumonia are non-contagious. Having in view the fact that the contagium of Pleuro-pneumonia is given off, I would say almost solely by the lungs, the reason for such difference is not far to seek, and rests in the fact that inoculation never produces lung-disease. As already hinted, and as I shall show further on, the eruptive phenomena, which next to the fever, are the leading features of inoculation, occur at the seat of operation.

It is fortunate that this is so, had it been otherwise, had the lungs as a result of the operation become affected in the same way that they do when an animal contracts the disease, the operation would be inexpedient, dangerous, and so be valueless, since each animal which chanced to be operated upon would become a contagious centre, capable of disseminating the disease, quite as much as an ordinarily affected one. I believe myself correct in affirming that this fact, which is really one of the most important in connection with our subject, is not generally known. In a paper like this, however, the matter must be placed beyond all doubt, and I am glad to be able to do so, not only from my own experience, but by the testimony of those who have made inoculation the subject of their investigation.

Dr. Willems, of Hasselt in Belgium, who was the first to be successful with the operation, thus puts it:—"By inoculating Pleuro-pneumonia a new disease is produced, the affection of the lungs, with all its peculiar characters being localized on some part of the exterior," *vide* Williams' "Veterinary Medicine," p. 152, and again on page 153 of the same volume, we find the Belgian commission arrived at the conclusion, that the "Inoculation of the liquid extracted from the lungs of an animal affected with Pleuro-pneumonia does not transmit to healthy animals of the same species, the same disease —at all events so far as its seat is concerned."

During my visits to Australia, I learned from Mr. Graham Mitchell, F.R.C.V.S., and from Mr. Alexander Bruce, chief inspector of stock for New South Wales, both of whom have had a long and extensive experience of inoculation, that their observations had led them conclusively to the same opinion.

Better than all, however, is the evidence which I can offer myself. During the last two or three years I have effectively inoculated between 2,000 and 3,000 head of cattle, milkers chiefly, of which number at least 2,500 have since been slaughtered for public consumption. Most of them have been killed at the abattoirs of Edinburgh and Leith, and have always been found to have perfectly unaffected healthy lungs, so far at least as "Pleuro" has been concerned. I do not in the whole course of my experience know of a single instance to the contrary, and have no hesitation in saying it may be taken as a well-ascertained fact, that "An inoculated animal, healthy at the time of operation, cannot possibly communicate Pleuro-pneumonia to another one." I have frequently been asked the question, "Will an inoculated animal contract Pleuro-pneumonia?" To such question as the result of my experience I can with confidence reply, No. I do not know of a single instance of such, but I would draw attention to the fact that I emphasize the word inoculated. In unskilful or careless hands, or from other causes, an animal may have been put through the form of the operation and still not have been inoculated, and such a one may undoubtedly contract the disease; but I say that no animal will contract it that, after having been operated upon, has exhibited the characteristic features of inoculation, in proof of which I can give innumerable instances.

Over and over again I have seen inoculated cattle subjected to the test of standing the onset of not only one, but two or three outbreaks of the disease. It has been quite a common thing in my experience for inoculated cattle to stand exposed to the contagium of dying ones around them for days and for weeks, and to remain uninjured in other cases, where freshly brought in ones, not inoculated, have at once fallen victims. There can be no manner of doubt about it—"an inoculated animal, healthy at the time of operation, will not afterwards contract Pleuro-pneumonia."

Out of many instances in support of such a statement, I may be allowed to give the following one:—A client, who has a large town dairy, as also a farm some two miles or so from town, had Pleuro-pneumonia very badly in his town byres; the disease had been running its course for some weeks, so that at the time of my inspection of them more than half of his large stock were affected. I inoculated all that I could make at all sure about not being affected, the others being left to the care and, of course, at the disposition of the local authorities's inspector. On the same day I inoculated about a dozen calves, also in the town byres, and up at the farm ten head of freshly bought in, and very fine shorthorn milkers. Well, in a few weeks all but two or three of the uninoculated ones were condemned and slaughtered, one or two at a time. Of course this was to be expected, as I said we knew them to be affected. What I wish to point out is that they actually stood dying under the same roof with those I had inoculated, but without injuring them. Thus far the occurrence is a common one in my experience; but, fortunately, to illustrate still more the value of the protective power of inoculation, the history of this outbreak and its arrest does not end just yet. The byres were quarantined for two months, during which time they were thoroughly cleansed, the only inmates being the few I had inoculated, as also the calves—all of which were quite healthy. At the end of two months six fresh cows were brought in; they were not inoculated, for what reason I do not know, unless it be that my client wished to test the matter thoroughly. In less than three months the whole six were one by one put down for "Pleuro," the inoculated ones being still well. The same process of quarantine and cleansing had to be gone over, and then the premises being held clean by the local authority, the cows which I had inoculated at the farm about eight months previously were brought in and housed in the byres so many had been sent out of. To the stock were added four fresh ones, which

again were not inoculated. It will be seen that at this time there were in the byres, subjected to the influence of any existing contagium—

1. The cows originally inoculated in them.
2. The calves originally inoculated in them.
3. The cows inoculated at the farm, but which had never till now been exposed to the risk of contagium.
4. The four freshly bought in cows.

The result was the disease appeared again, and carried off three out of the four fresh cows which had not been inoculated, all the others remaining in the most perfect health. The history of this outbreak is not by any means the only one of its kind I have had to deal with. I have quoted it from among a number, because to my mind it shows out so strongly the value and the protective power of inoculation, not only in these few remaining exempt that had been exposed all along to the contagium, but in those which had been brought in from the farm, and exposed to the influence of a contagium eight months after they were inoculated, and which, to prove its presence, carried off three out of the four not done. The calves were sent to the farm and were there mixed with some other stock, with no bad result in the way of conveying the disease, and I finally eradicated the disease from the town byres, by systematically inoculating all fresh stock as bought in, and until such time as I judged the contagium would have died out.

One may reasonably here ask, Why in the face of such facts has the operation been kept so much in the background? The reason is not far to seek, and bears rather heavily on the veterinary profession.

When inoculation was first declared to be a success by Dr. Willems already quoted, various Government commissions, composed largely, if not entirely of veterinary surgeons, were appointed to investigate the subject and report thereon. Some reported favourably, others did not, and there can be no doubt that their difference of opinion arose from the incompleteness of the experiments witnessed, and, above all, from faults in the mode of performing the operation.

In this country I believe I am correct in affirming that the then heads of the veterinary profession entirely condemned it. Professor John Gamgee did certainly for a time extol the operation, but he did so solely from his having fallen in with the views of some successful exponents of the operation on the Continent. When he began to practice it, his views as a result of his practice entirely changed, and we find him in his "Domestic Animals in Health and Disease," in the article on Pleuro-pneumonia, saying that "the operation was one which he had to condemn from experience." He does not say why, but we know it was because his mortality average was as high, and in some one or two instances higher, than from the disease itself. I have made considerable inquiry into his work in Edinburgh, and from what I have learned I am not surprised he had such losses, his mode of performing the operation from beginning to end was a most objectionable one. Had Mr. Gamgee exercised more care and more perseverance he would have had no reason to pen the above opinion, and there can be no doubt thousands and thousands of cattle would have been, and much useless legislation in the matter might have been, saved to the country.

When the heads of the profession condemned the operation, it is not to be wondered at if the rank and file followed suit, and no doubt many did so, without knowing anything about it. Blindly they believed what they were told, and I am very much afraid they will continue to do so till some one else in authority tells them otherwise. As Fleming says:—"The persistency with which the value of inoculation has been ignored in this country would be astonishing, did we not know how stubbornly some people shut their eyes

to the light, and close their minds to the reception of facts which are not in harmony with preconceived notions, or are adverse to opinions hastily promulgated, and based on very imperfect knowledge."

On the Continent, however, the operation has not been so cavalierly treated; from the first its value has been more or less acknowledged, in proportion to the degree of success achieved by the operation, and in one kingdom at least (Holland), compulsory inoculation of the healthy is now and has been for a long time bracketed with the slaughter of the diseased. In South Africa the value of inoculation has been recognised for years, and, indeed, only a few months ago, I received a letter from Natal, in which the writer says:—"It may be interesting for you to know that our colony of Natal has suffered severely for years from Pleuro-pneumonia, or lung sickness, and that the only means of prevention found to be of any use is inoculation."

In Australia the operation has also been long known and successfully practised, and, to my mind, it speaks volumes in favour of its value when one considers how long its prestige has not only lived, but that it has actually grown in favour under the most adverse conditions. In a report by Mr. Bruce, Chief Inspector of stock, New South Wales, he says:—"Inoculation is now generally practised throughout Australia, and, as the stock-owners report, with decided success. There have certainly been frequent instances of its failure, but these could always be traced to one or other of the following causes:—

1. The cattle being diseased when operated upon.
2. To the use of improper virus.
3. To a wrong mode of operating.
4. To unfavourable weather."

He says, farther, that notwithstanding that the first attempts at inoculation were made under the most unfavourable circumstances, a very large majority of the stock-owners in all the colonies expressed themselves strongly in favour of the operation, and that majority has since gone on steadily increasing. In a later report (1875), the same gentleman impresses upon his government the desirability of making inoculation a compulsory measure, the whole of his subordinate inspectors, and the vast majority of the stock-owners being thoroughly satisfied that it was the only preventive and the only measure short of wholesale slaughter which would eradicate the disease.

Perhaps, however, the most convincing evidence of its value, certainly the strongest yet afforded in this country, is in the history of my own work among the dairies of Edinburgh, Leith, and elsewhere, both in the county and out of it, where, in the two former especially, Pleuro-pneumonia had been rampant for years. From information personally gathered, I believe myself quite within the mark when I state that, with few exceptions, all the dairies in and around Edinburgh were more or less infected, and seldom free from the disease for any length of time. I have been credibly informed that it was no uncommon occurrence for a man's stock to be cleaned out twice within one year.

Such, then, was the state of matters when I began to urge the dairymen to inoculate. Unfortunately, the bad results which had been obtained by Mr. Gamgee were still fresh in the memory of my clients; so that it was a year or two before I could be allowed to demonstrate that the fault did not lie in the inoculation, but in the mode of carrying it out.

At length, however, on the 1st February, 1878, I was permitted to inoculate some newly bought-in poor Irish milkers for a much-respected client (Mrs. Cairns), under conditions which, considering the trial was to be decisive for or against the operation, were by me considered crucial.

The byres were and had been for a long time more or less infected, and, in

spite of alterations and every other precaution, they had got into that state that it seemed impossible to carry on much longer. There were, at the time I operated, cows standing in the byres that were affected with Pleuro-pneumonia; these were allowed to remain tied up, I may say, alongside of my inoculated ones. The result, however, I am glad to say, proved at once the value of inoculation when properly done. All of them did well; more were inoculated, and also did well, and as in a few weeks it was seen they were remaining healthy, I soon had the gratification of knowing that inoculation was in a fair way of establishing itself.

The story of the following months is one of incessant labour. Byre after byre was placed in my hands for the one purpose, and in all of them I arrested the ravages of the disease, and by continuing in each case the inoculation of all fresh stock as they were brought in, finally eradicated it. Of course there is always the danger of buying it in. I have frequent instances of such. No great harm, however, results. Those inoculated are not infected, and those uninoculated, if any, are at once protected by the operation.

Since the day upon which I commenced publicly inoculating (1st Feb., 1878), down to the present time, I have inoculated in ninety-six different places and byres. Of these, at the time of operation, eighty-nine were infected, the remaining seven being clean—the number of cattle inoculated being within a few of 2,700. The mortality during the first year was five per cent., but owing to the greater precautions taken, arising out of a better knowledge of what is required, my mortality since has barely averaged two per cent.—a very low average considering that the vast majority of the cattle have been milkers, the class with which there is most risk. Let any one possessing any knowledge of the disease ask himself how many of those cattle would have been saved under the old *régime*. I assert that inoculation drove the disease out of every place where it was put in force—starved it out, in fact, and in point of comparison, in a way superior to any mode of doing so under the working of the Contagious Diseases (Animals) Act. If proof of this be required, it can be abundantly obtained from my clients, the dairymen of Edinburgh and elsewhere, and from many others, some of whom were not clients, but witnesses of the work.

I cannot leave this part of the subject without expressing a hope (I do so modestly), that if at any time the Government of this country desires to obtain reliable information as to the value of inoculation, they may come here for it. I can promise they will not go away empty-handed.

Precautions to be observed in carrying out the Operation.

In whatever way the operation be performed, its success and value depends largely upon the amount of painstaking, intelligence, and care which is brought to bear in the working out of detail, and in the amount of attention which is paid to the conditions and circumstances surrounding each outbreak. These conditions I have found may, for convenience, be divided into two sets—

1. Those existing outside the animal.
2. Those existing within the animal.

In the case of the first of these, the most important is the temperature and kind of weather prevalent and likely to be at the time of operation. In this country, from the month of April to the month of September, the operation may be proceeded with very little risk indeed, either outside or inside. Bullocks, and young stock especially, need never be housed, unless under sudden and unusual circumstances of very severe and wet weather. Cows, however, in my experience, are always better housed, especially if they are milkers. During the cold winter months there should be in the case of cows no exception to this rule; they should always be housed under inoculation,

and every care taken to ensure the thorough comfort and genial warmth of the byres. They must be kept absolutely free from draughts of cold air there should be no open doors, holes, nor broken windows behind them; and I have made it a practice, while allowing free breathing-room over their heads, to keep them well protected over the back by packing the space between the rafters and roof with plenty of straw. In extreme cold weather I have successfully several times arrested very severe outbreaks without casualty, by adding to these precautions clothing the body, especially the back part of it, with bags or any coverings handy and warm enough, and by keeping lights burning in the byres day and night, so as to modify the temperature of the surrounding air. In short, in the case of cows, give them air at their heads above, but in other directions they cannot be kept too comfortably warm. So in the case of bullocks that may have to be inoculated during the cold months, I consider it necessary, and always have taken steps to ensure them more protection and comfort than is afforded them in the fields or in open cattle courts.

During last winter, and during cold raw weather, I arrested, without loss, an outbreak, the precautions taken to ensure comfort being, putting the animals (three-year-old bullocks) in sufficient number into different sheds, so that their very numbers ensured a degree of heat; the roofs of the sheds were covered thickly with straw, and the openings in front of the sheds were filled in with flakes outside and inside, with bundles of straw between. The result was that, as the steward said, they were sometimes almost too warm. All did well, however. I stopped the disease without loss. I mention the case to show that, even if an outbreak occurs in the depth of winter, and it be decided to inoculate, the danger from cold need be no bar to the operation, seeing that the animals can be made warm enough by the exercise of a little ingenuity.

As I have already said, the operation is attended with little or no risk during mild and warm weather. Grazing stock and calves may be done with the greatest impunity. Cows, however, I must repeat, are better housed, so that they may be kept quieter and more under observation.

Attention to the second set of conditions, or those existing within the animal, is even more important than to the first.

The object of inoculating being generally to arrest an outbreak quite as much as to prevent it, it is of the greatest importance to determine accurately those that are already affected. It is hardly within the province of this paper to enumerate the various symptoms by which "Pleuro" is known. They are sufficiently well known; but I would point out the immense value of, and assistance that may be derived from the intelligent use of, the clinical thermometer on all such occasions. Cattle affected with Pleuro-pneumonia have been, and no doubt often are, inoculated in ignorance of the fact that they are affected; and although the same may happen, even when the thermometer is employed in the detection of the disease, it is, in my experience, not so likely to happen, as the reading of the instrument will in most cases indicate "Pleuro," long before the animal exhibits any of the ordinary symptoms of it.

In health the temperature averages in grazing stock 101°, or thereabouts; in housed milk cows the average obtained from some thousands is 101½°. In Pleuro-pneumonia the temperature ranges from 103° to 107° (in some cases falling as low as 100° before death), and as inoculation does not pretend to cure the disease, it is advisable that due care be taken, and that none affected be inoculated. I advise the temperature being taken in every case if possible. I am aware that this is easier spoken about than done in the case of bullocks and young stock, but in cows that are housed, and in very young stock, it always can be done. All those that indicate health—that is, those whose

temperature ranges from 101° to 102½°—may be done. Those ranging from 103° to 107° should not be done. True, there are cases in which the temperature may range at and above 103° from causes other than "Pleuro." No matter, do not inoculate such; rather delay the operation for a day or two until the temperature declines, or until satisfied one way or the other. Those whose temperature ranges about 103° are the ones the operator requires to be most guarded about. I have done lots of them that have come well through, but from the mild local results obtained I have judged such cases to be slightly affected ones, although probably only to the extent of the primary fever. It is right to mention that, even in cases where the thermometer has been most carefully used, animals have turned out in a day or two to be badly affected that at the time of trial showed no signs of it. Such cases, however, are rare, and do not affect the generally great value of the instrument intelligently used.

No animal should be inoculated, unless under very urgent circumstances, that has any condition about it of an inflammatory nature, or tendency that way—any strain, wound, or bruise, for instance. Internally and externally they should be in normal health and condition, or as nearly approaching to it as possible. In particular, no cow should be done that is within two months of calving, or that has just calved. I have inoculated without casualty cows eight days after calving. I consider the practice to be dangerous, however, and never unless forced to do so inoculate any until they are about three weeks calved; until such time, in fact, as the second cleansing is over, and the womb and other parts engaged in the process of parturition have recovered their normal tone and condition.

In the matter of feeding I have not found that any change or special precaution is necessary, provided always the food in quality and condition be non-injurious in itself.

The necessity for the precautions quoted rests in the circumstance that the peculiar inflammatory action set up by inoculation is apt to localize itself in any part, not the seat of the operation, that is inflamed, weakened, or deficient in tone and vigour. And it is curious that, however benign and easily managed inoculation may be, confined to the ordinary seat of operation, it is highly dangerous, and frequently fatal if set up in any other part of the body. When I commenced inoculating I was in ignorance of all that I have here cautioned others about; the path I was treading was a perfectly new one, and it has indeed since often been matter of surprise to me that I did not lose more than I did.

Mode of Operation.

In proceeding to arrest an outbreak of "Pleuro," the first thing required is the lymph, or specific virus of the disease, with which to inoculate. This is always obtainable in the case of an outbreak, by simply slaughtering a beast judged to be in the early stages of the disease. Lymph, or virus, is the amber or sherry-coloured liquid exudate found occasionally on the free surfaces of the Pleuro, under that membrane, between it and the lung, and nearly always in the interlobular tissues of the lungs; in consistence it is somewhat viscid, and has a not unpleasant odour; it coagulates readily upon removal from the lungs, but again assumes a liquid condition. In selection of the lymph too much care cannot be taken; if possible let it be taken from a freshly killed beast—one in fair condition, and free, as far as can be ascertained, from other disease, but especially Tuberculosis. My mode of collecting it cannot, I think, be improved upon for simplicity. I open up and pull apart with my fingers the tissues containing it, taking care not to tear or break down their substance; a pouch is thus formed into which the lymph gravitates, and from which it is spooned out into a clean vessel,—a

plate or saucer, if for immediate use, or into a clean glass bottle if to be kept, in which case it should be tightly corked up and buried in a few inches of soil until required. The very greatest care must be taken that only lymph as here described be collected, free from all impurities, blood, frothy serum, and other extraneous matter. Good lymph is only to be obtained in the salmon and brick red-coloured portions of the diseased lung, never from the hepatized dark-coloured portions. I mention this particularly, for not only have portions of the hepatized lung been used, but the fluid which follows an incision made through its substance, practices which, in their day, led largely to some of the bad results obtained. Lymph may be kept in cold weather fit for use, if excluded from the air, for from three to five days, but in warm weather it cannot well be kept quite fit for use beyond the second or third day. There are ways of preserving it for two or three months; but, as my experiences have been rather unfavourable to using lymph in any way but in its pure state, I do not mention them, since I cannot recommend their adoption. In my hands, as in those of others, the use of preserved lymph, which is frequently weakened or in some way changed, has been attended with uncertain results; as, however, in inoculating we wish to have perfect exemption, I long ago gave up its use.

(*To be continued.*)

RECENT OBSERVATIONS ON THE FILARIA IMMITIS OF DOGS.

In the *Giornale di Anat. Fisiol. et Pat. degli Animali* of Pisa, for 1877-78, quoted in the *Archives Vétérinaire* for February last, the veterinary professor Rivolta has some interesting remarks on the *Filaria immitis* of the dog.

The writings of Delafond and Gruby, Davaine, and others, have shown that it is not rare to find in the blood of the dog prodigious quantities of embryos of filariæ. It is also demonstrated that there sometimes exist in the heart of the same animal, adult nematode worms which Delafond and Gruby classed with the filariæ, by the name of *Filaria papillossa hæmatica*, a designation afterwards changed by Leidy to that of *Filaria immitis*. The two first-mentioned authors have placed beyond doubt the fact that the embryos which circulate in the blood are derived from the adult filaria residing in the heart. But as the latter are only rarely met with, while the presence of embryos in the blood is far from being an uncommon occurrence, the question arises as to their origin.

In 1875, Professor Ercolani * remarked that when the adult *Filaria immitis* is not found in the heart, it is to be discovered in the subcutaneous connective tissue in some region of the body. There is no dog in whose blood the embryos are found, in which we may not find in some part of the body the adult worms which have produced them. Observation has not yet revealed to us all the phases in the life history of the *Filaria immitis;* nevertheless, the discovery of Professor Ercolani is of great importance, as it makes known the origin of the embryos in the blood when, as is so often the case, adult individuals are not found in the heart. Rivolta dwells with satisfaction on the fact that he has always found specimens in the subcutaneous connective tissue, when embryos were present in the circulating fluid. An instance of this kind is given by Professor Vachetta, as occurring in a dog which had served for experiments.

* Osservazioni elmintologiche sulla dimorfobiozi nei Nematodi, sulla *Filaria immitis*, sopra una nuova specie di Distoma dei Cani. Bologna, 1875.

The object of Rivolta's paper is to inquire whether this blood-worm injures the dog, and if it produces any special affection or pathological lesions capable of causing death. It had already been demonstrated by the observations and experiments of Delafond and Gruby, that the presence of thousands of embryos in the blood is quite compatible with a certain condition of health during a given time. But these writers, and also Ercolani, have noted that the embryos, in growing, became arrested in the smaller blood-vessels, and may thus play the part of emboli. It is true that this increase in size may take place slowly, so that the dog may live for months without exhibiting any disturbance in health. But in every case, as they derive their nourishment from the blood, some modification must take place in the constitution of that fluid, although we do not as yet know in what this modification may consist.

It has happened to Rivolta to make autopsies of dogs which have died suddenly, or after only a few hours' illness, but without finding any pathological alterations capable of explaining the fatal result. But an examination of the blood has always demonstrated the presence of numerous filariæ. When he was at Turin, he was surprised to find embryos of this filaria in the blood of dogs, which during life presented all the symptoms of dumb Rabies, and which, from a clinical point of view, might be regarded as suffering from that disease. But Rivolta did not hesitate to attribute the paralysis of the lower jaw and tongue, as well as the other symptoms, to the embolic action of these embryos (cerebral lesions). He insists, however, that between *true* dumb Rabies and these embryos there exists no relationship whatever; though probably many supposed cases of the disease are due to these worms. Delafond and Gruby had already remarked that dogs infested by these embryos sometimes died after one or more epileptiform attacks. In addition, however, Rivolta believes that they may cause death by producing pulmonary congestion or enterorrhagia, or grave hæmorrhagic Typhus.

After quoting a number of observations, Rivolta gives the following resumé :—

The embryos of the *Filaria immitis* may live for a long time in the blood, without any visible alteration in the health of the dogs; but at the end of a certain period they predispose these animals to Typhœmia, and when they have acquired a determinate volume they accumulate in the small blood-vessels, and in this way produce hyperæmia of the brain, lungs, or intestinal mucous membrane. So that death may arise from Apoplexy, cerebral congestion (Epilepsy, Eclampsy, a form of dumb Rabies), acute Typhus, and pulmonary or intestinal congestion.

In the *Clinica Veterinaria* for April and May, 1881, Professor Lanzillotti-Buonsanti has an interesting paper on the alterations which the embryos of *Filaria immitis* produce, and on a cyst in the intermuscular connective tissue of a dog, containing this filaria. He has often had occasion to observe the embryos of the filaria in the blood of the dog, and in all these cases he has found the adult worm either in the right cavities of the heart, or in the pulmonary artery or its ramifications. In two dogs killed for investigation, and which had numerous embryos in their blood, he discovered in the lungs, immediately beneath the pleura, small nodules the size of a millet seed, greyish-white in colour, usually having a reddish central point, and often conical in shape. These nodules were composed of connective tissue containing numbers of filarial embryos, non-motile and very granular.

In another instance he noted some alterations in the kidneys. And in another dog he found, in the upper layer of muscles in the posterior region of the thigh, a small cyst about eleven millimetres long and five broad, in which were two worms doubled several times on themselves, and lying in a

small quantity of transparent fluid. These were a male and female *Filaria immitis*. The walls of the cyst were composed of fibrillar connective tissue, continuous with the intermuscular connective tissue.

ON THE PRECAUTIONS NECESSARY TO PREVENT THE DIFFUSION OF HYDROPHOBIA.*

BY DR. H. VAN CAPELLE, THE HAGUE.

1.—The prevention of rabies involves the prevention of hydrophobia.

2.—In 1873-74 the cases of rabies became so numerous in the Netherlands that the Government resolved to present to the Chambers of the States-General a Bill for dealing with this disease.

3.—The measures proposed by this Bill rested on the doctrine—ably maintained in an article in the "Encyclopædic Dictionary of the Medical Sciences" by M. Bouley—that rabies is essentially a contagious disease.

4.—The principal measures of the Bill, which was passed and became law on the 5th of June, 1875, were as follows :—

(*a*) The slaughter of every dog or cat which was either mad or had been bitten by a mad animal.

(*b*) The use of the muzzle for a period of four months for all dogs in any commune in which a case of rabies had come under notice, whenever they were in a public place. The same regulation to be in force in the adjoining communes, or in a part or the whole of the province, when there were grounds for believing that a mad dog had been seen there.

(*c*) The slaughter of all dogs found in public places without a muzzle during the period for which use of the muzzle had been ordered.

(*d*) All proprietors of dogs to kill, shut up, or chain up, if possible, any mad dog they own; the facts to be immediately communicated to the *bourgmestre* or to the superintendent of police.

(*e*) All suspicious cases to be examined into by a veterinary surgeon.

5.—The law came into operation on the 1st of September, 1875. During the 4 last months of that year 41 cases of canine madness occurred in 36 communes; being distributed in all parts of the country, but occurring mostly in the provinces of northern and southern Holland, with their large towns, and in the provinces bordering on Belgium. A rapid diminution of vagrant dogs took place. In the twelve months of 1876, 55 cases of canine madness in 49 communes; 9 of the cases only being in the provinces of northern and southern Holland; the majority being concentrated on the borders of Belgium. In 1877 only 14 cases, all in the communes bordering on the Belgian and Prussian frontiers. In 1878, 4 cases, all near the frontier. In 1879, 7 cases, 3 occurring in the centre of the country. One of the latter cases occurred in a sporting dog recently imported from England. A second case was that of an ownerless dog which had fled from Rotterdam to Kralingen, and as no cases had been previously observed in Rotterdam for several years, the dog had probably escaped from some ship in port. No information as to the third case. In 1880, 13 cases, all near the Belgian frontier.

6.—These results prove the efficacy of the law of 1875, and the need for international measures; also the possibility of stamping out rabies in Europe and all civilized countries.

7.—It is proposed that the Congress shall declare it desirable that the Governments of all civilized countries should agree as to measures for the abolition of rabies, which disease, as shown by the results obtained in the Netherlands, is exclusively of a contagious nature.

* Abstract of a paper read at the International Medical Congress in August.

PASTEUR'S METHOD OF PROTECTIVE INOCULATION.

THE great attention which protective inoculation for Anthrax is now receiving, and the demands for inoculating fluid, have led M. Boutroux, 22, Rue Vauquelin, Paris, to prepare and sell the "Vaccin," as it has been wrongly named, and to issue the following instructions as to its employment. As these instructions are very useful, and may be of service to members of the profession, they are herewith appended.

The disease known under the names of "Charbon," Splenic Fever, and Siberian Plague, is caused by the development of a microscopic organism (*Bacterium*) in the blood of the animal. If a few drops of the blood of an animal which has died of this disease are introduced under the skin of a healthy sheep or rabbit, death is almost sure to follow in the course of two or three days. The bacteria which cause the disease are then in an exceedingly virulent condition, and if the virus were cultivated, that is, if it were developed in a solution favourable to its growth, it would retain its virulence. By adopting a plan which has been described at length in the reports of the Academy of Sciences, Messrs. Pasteur, Chamberland, and Roux have succeeded in attenuating this virulence, and they have managed to obtain fresh virus of different degrees of strength. Thus they can produce a very powerful virus which would be sure to cause death, or virus more or less attenuated which would communicate the disease in a mild form, or virus which is entirely harmless, and which would not impart the disease at all.

Practice of the Operation.

The "vaccinal" liquid or lymph is conveyed to its destination or to the nearest railway-station, in closely-corked tubes (Fig. 1), which contain suffi-

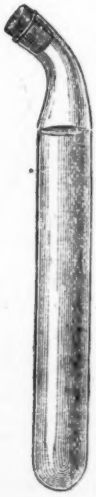

Fig. 1.

Fig. 2.

cient to inoculate 50, 100, 200, or 300 sheep. These tubes are labelled either first vaccine or second vaccine. A certain quantity of this liquid must be inserted under the skin of the animal. This can be done with a Pravaz syringe (Fig. 2), such as is used by doctors and veterinary surgeons to make injections in the skin of horses. First, the syringe must be filled with liquid. For this, the small metallic thread which is in the needle (and which is intended to keep out any foreign substance that might choke up the needle) must be removed. The needle must be fixed in the piston tube, the vaccine shaken, and the liquid drawn up by slowly raising the piston. If the syringe works well it will be completely filled with liquid, and will leave only a very small air bubble under the piston. It frequently happens, however, that the piston is more or less dry, or that the needle does not fit well. Then the liquid does not fill the syringe completely, and a very large air bubble is found under the piston. In this case, by repeating the process two or three times, the piston will be moistened, and if the needle fits well the syringe will be filled completely. It is indispensable that this first condition should be attained.

If, however, owing to any accident, the piston should be too dry, and allow the air to escape, is should be boiled in water and left to cool in the vessel in which it was boiled until it is lukewarm, and the syringe must be filled two or three times with this water to swell the piston. Water which has not been boiled must never be used for this purpose.

If the water passes above the piston, it is a sign that the piston is bad and will have to be changed. If one syringe only is at the disposal of the operator, the piston must be tightened a little with the small key which is in the box of the syringe.

Fig. 3.

When the syringe is quite full, the little brass marker which is on the stem of the piston must be placed at the division marked 1. An assistant must then take hold of the sheep which is to be inoculated, and hold it firmly by its fore-legs in the required position (see Fig. 3). The operator must insert his needle under the skin in the middle of the right thigh, and push the piston until the marker touches the syringe. The inoculation of the first animal is then complete. The syringe is drawn back, the brass marker is placed at the division marked "2" on the stem of the piston, and the second sheep is operated upon; and so on, each syringe holding enough to inoculate eight sheep. When empty, it must be filled again in the same way as before. With a little practice, a man would soon be able to inoculate 150 sheep per hour. Twelve or fourteen days after the first operation, the process must be repeated with the second vaccine; but this time the injection must be made in the left thigh of the animal—that is, in the one which has not been already operated upon.

The same lymph which is used for sheep and goats may be taken for cows, oxen, and horses; but a double dose of the fluid will be needed for the larger animals—that is to say, the small brass marker must be placed at the division 2 for the first operation; afterwards it may be put at 4, then at 6, etc., each syringe containing enough lymph to inoculate four animals instead of eight. Instead of injecting the lymph into the thigh, it should be put behind the shoulder for cows and oxen, and in the neck of the horse, care being taken to place it where the collar will not press upon the marks.

The skin of cows and oxen is very difficult to pierce with a needle; care must be taken, therefore, to make the puncture in an exact line with the syringe, to avoid a bruise. It is a good plan also to make a small fold of skin with the left hand, by way of facilitating the introduction of the needle. The same needle which has been used for sheep may be used for cows and oxen, but, for safety's sake, a stronger needle for operating in the larger animals is put into the box with the syringe.

It is most important that the vaccinal liquid should be in a condition of perfect purity when it is injected under the skin. If the lymph were impure—that is to say, if it were contaminated by water which had not been boiled, or by dust, or other foreign matter—there would be injected into the animal, not only the mild virus, but other organisms, those of erysipelas or septicæmia (for example), which might give another disease, or the inoculation might be hindered. The liquid as sent is quite pure, and may be drawn directly into the tube, but it is necessary that the syringe also should be pure. New syringes which have never been used are so, but after they have been employed for one inoculation they should be replaced by fresh ones. The operation is an exceedingly delicate one, and the syringe should be repaired and cleaned before it is used again. In one word, a syringe should not be used a second time after some days have elapsed since it was first employed, until it has been thoroughly cleansed.

The lymph should be put as soon as possible in a cellar to keep it cool, and a tube which is opened one day should not be employed on the following or succeeding days. Consequently, the contents of every tube which is opened should be used the same day, and any matter which remains should be rejected without hesitation.

If an operator is pressed for time, or have too many sheep to inoculate, he may do his work in a hurry; then there is a danger that the needle may pass over the skin instead of piercing it, and shoot the vaccine outside; or he may neglect to move the marker, and from that time he may push the piston but the lymph will not be injected under the skin. Under these circumstances, if there is a doubt about the first inoculation, there is danger that as the first

vaccine has not been introduced into the system, the second vaccine, being more active, may cause death.

Great care should be taken also to prevent sheep which are being inoculated with the first vaccine, from escaping too soon out of the hands of the assistant who is holding them. These sheep may mingle with the flock, and then have an injection of the second vaccine before they have been partially preserved by the first, and in this way accidents may arise.

There is another mischance to be guarded against, namely, that the air in the tube must never be at the needle end. If it were so, the operator might push the piston, but air only, not lymph, would escape, and thus the inoculation would not be accomplished. This accident is of frequent occurrence.

Oxen and cows have not hitherto exhibited a tumour at the points inoculated. Horses, especially young horses, have sometimes had tumours more or less extensive, but they always subside with tolerable quickness, without any treatment whatever. The experiment of inoculating young horses three times has been made, that is, twice with the first vaccine and once with the second, but not the slightest tumour has been produced. Proofs of this kind continue to increase. It may be that this is the best method of inoculation for horses.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD AT THE ALBION HOTEL, ALDERSGATE STREET, MAY 1ST, 1882.

Present:—The President, Professors Robertson and Williams, Messrs. Greaves, Dray, Taylor, Freeman, Wragg, and the Secretary.

The notice was read convening the meeting.

The minutes of the last meeting were taken as read.

The SECRETARY read a letter received from the Privy Council, together with a letter that had been addressed to that Body by a Mr. Puxley, an assistant to a member of the Profession, concerning the Veterinary Surgeons Act.

The PRESIDENT said that he did not think the letter required consideration, because the step taken in regard to getting a certificate of character had been done in the interests of the public as well as of the Profession. They had among other applicants returned convicts, broken-down railway porters, and men of the most degraded character. To register those men would be not only disgraceful but an injury to the public at large. He thought it would be a hardship for the College to have to register every man who cared to apply. Power to refuse was allowed by the Privy Council.

Mr. P. TAYLOR moved, "That the Privy Council be informed that no alteration in the terms of admission of existing practitioners had been made, and that the subject in due time would come before the Committee appointed to look after fit and proper persons to be registered under the Act; and that the letter sent be marked in red ink, and taken proper cognizance of by the Registration Committee, and attached to the application."

Mr. DRAY seconded the motion, which was carried unanimously.

On the motion of Mr. TAYLOR, seconded by Mr. DRAY, Mr. Arthur W. Hill, the Secretary, was appointed Registrar for the ensuing year.

Mr. DRAY congratulated Mr. Hill on his re-election, and hoped that at a future meeting the Council would take the Secretary's salary into consideration. The labours connected with the office were so immense, and so con-

stantly accumulating, that the present salary was a very inadequate compensation for the duties performed.

Mr. DRAY'S remarks were endorsed by Mr. Gowing, sen.

The SECRETARY returned thanks for his re-election. He said the work had been very heavy; but by the valuable assistance that had been rendered by the President and Council a satisfactory end had been arrived at, and he begged to thank the Council for the assistance they had rendered him in his work.

This finished the business of the Special Meeting.

THE ANNUAL GENERAL MEETING

was held at the Albion Hotel, in Aldersgate Street, E.C., on Monday, 1st May, 1882.

The PRESIDENT in the Chair.

Present:—Messrs. N. Almond, G. A. Banham, E. E. Batt, H. T. Batt, T. G. Batt, J. R. D. Beech, W. G. Boswell, W. C. Branford, A. Broad Arthur Broad, G. T. Brown, J. H. Brown, J. W. Carlisle, B. Cartledge, H. J. Cartwright, R. H. Cartwright, F. M. Case, A. R. Charles, W. H. Coates, J. Collins, J. Cooper, P. S. Cowan, J. Roalfe Cox, E. G. Crowhurst, C. Dayus, T. A. Dollar, Wm. W. Dollar, E. C. Dray, G. R. Dudgeon, P. Dundon, E. Ewing, J. H. Ferguson, F. W. Fitzwygram, G. Fleming, J. Fraser, J. Freeman, W. F. Garside, H. D. Gibbings, J. M. G. Gillingham, R. Glover, J. A. Gosling, T. W. Gowing, T. W. Gowing, jun., T. Greaves, M. Hack, J. Hall, J. B. Hamilton, H. Hancock, M. J. Harpley, W. S. Harrison, M. Hedley, Wm. Helmore, O. Hills, W. Hunting, E. Lawrence, H. Lawrence, J. Mackinder, J. B. Martin, J. Matthews, D. McGill, J. J. Meyrick, C. Moir, J. Moore, T. Moore, Hon. Montague Mostyn, M. E. Naylor, Alfred J. Owles, H. R. Perrins, W. Pritchard, J. Reynolds, F. H. Ridler, Wm. Robertson, A. Robinson, J. Rowe, Ben. H. Russell, Fred. G. Samson, C. C. Sanderson, A. H. Santy, A. J. Sewell, E. S. Shave, C. Sheather, Thos. H. Simcocks, H. L. Simpson, S. H. Slocock, John J. Sperring, P. Taylor, W. A. Taylor, T. Taylor, L. C. Tipper, F. Walker, T. Walley, W. B. Walters, J. Ward. A. C. Wild, W. Williams, W. Wilson, J. Woodger, F. W. Wragg, and the Secretary.

The SECRETARY read the Scrutineers' report, which showed the following names, with the number of votes for each:—

Mr. T. H. Simcox	738	Mr. W. F. W. Wragg	397
General Fitzwygram	719	„ George Morgan	379
Mr. J. Collins	555	„ Duguid	371
„ H. L. Simpson	469	„ Broughton	331
„ H. R. Perrins	419	„ J. R. Cox	275
„ A. H. Santy	412		

The first six members on the above list were declared duly elected members of the Council.

Messrs. J. Matthews, R. Cartwright, W. F. Garside, E. E. Batt, E. E. Shave, J. R. D. Beech, R. W. Burke, A. Broad, J. Cooper, and G. R. Dudgeon, were Scrutineers.

The SECRETARY read the motion convening the meeting.

The minutes of the last annual meeting were read and confirmed.

On the motion of Mr. DRAY, seconded by Professor WALLEY, the annual report was received and taken as read.

Mr. TAYLOR thought several desirable alterations should be made in the report before it was received.

Mr. HELMORE also called attention to the same.

The PRESIDENT explained that the report had been drawn up partly by

himself and partly by the other members of the Publication Committee, and he (the President) unfortunately had no opportunity of seeing the proof of the report, as he was at the time in Scotland superintending the examinations. The several mistakes referred to were printers' errors.

Professor ROBERTSON called attention to Section 5 in the Committee's scheme in regard to matriculation, and suggested that the word "England" should be inserted before the words "Scotland or Ireland."

The PRESIDENT said, with regard to the subject of matriculation, it had been inserted in the report in order to allow the members to judge of the work of the Council during the year. The subject was still under discussion in the Council, and Professor Robertson being a member of the Council, could bring it forward when the proper time came for it to be discussed.

Mr. HELMORE said the meeting was obliged to Professor Robertson for bringing the matter forward, because all matters in the annual report were, as he took it, introduced for the purpose of discussion. As he thought it was to be discussed at a future meeting of the Council he should say no more, although he should like to hear some further explanation.

Mr. WILSON suggested that the portion of the report referring to the matriculation examination be referred back to the Council. In the voluntary subjects, especially for Fellowship, the candidates had to pass three examinations out of five. Higher examinations were given in English history, arithmetic, etc., etc., but he would respectfully suggest that a sixth clause should be introduced which should provide for an examination in advanced Latin and French. The profession was indebted to the President for the exertions he had made in passing the Veterinary Surgeons Bill. (Hear, hear.) A clause had been inserted in the Act to the effect that none but those after a certain date should be qualified to practice the veterinary art —that veterinary surgery should be practised only by those holding the diploma of the Royal College of Veterinary Surgeons. With reference to practical examination, it was competent for the Council to be very particular as to whom they should give their diplomas. He was strongly of opinion that if there were no power to make it compulsory, a young man should pass a certain time in pupilage. He could be sent back after his final oral examination either to the Veterinary College, in connection with the Royal College, or else to a practitioner who is a member of the Royal College of Veterinary Surgeons, for practical instruction for twelve months. He ought to learn the practical portion of his profession before he received the diploma of the College under which he could practise. But it ought to be remembered that a large number of useful men were prevented from coming forward, who had hitherto been useful in country districts in connection with the minor operations of veterinary surgeons, who would not now be allowed to practise. They must ultimately die, and other men would take their place. He quite agreed that they should have a full scientific knowledge; at the same time they ought to be educated as practical men, and to give them a practical education was one of the greatest advantages that could be bestowed upon them. He therefore thought that a practical examination ought to succeed the oral, and that instead of one hour being devoted to this, it ought to be two hours. By such means the position which the President desired to give to the profession would be maintained.

In answer to Mr. Helmore,

The PRESIDENT said that after the 31st December, 1883, no one who was not on the Register of the Royal College of Veterinary Surgeons could practise animal medicine or surgery under any name or title whatever.

Professor PRITCHARD said he scarcely understood it to be so. His impression was that if a person thought proper to practise as a veterinary surgeon in medicine at his own risk he could do so, and that the College had

no power to prevent him doing it; but if in the event of his acting as a practising veterinary surgeon, and calling himself "Veterinary Surgeon," then the Council had power to interfere with him.

The PRESIDENT said that Clause 17 of the Act specifies that no man could practise veterinary medicine or surgery under any name, title, or designation which would lead the public to believe that he was a practitioner in that particular branch. In the first place, persons were disqualified from practising under any name or title. They could not prevent people practising. If a horse came down and broke his knees, would the law be right in preventing an amateur paying attention to such a case? The law did this: it prevented any man taking the title of veterinary surgeon, and also prevented him suing in a Court of Justice for any expenses incurred in his practice.

Mr. HELMORE: Then they practise at their own risk?

The PRESIDENT: Yes.

Mr. HELMORE said he understood the President to say that it would be unfair to prevent a man practising under certain circumstances. He himself felt, along with others of his neighbours, that there were a number of good men practising who were not under the Act.

Mr. OWLES said the profession had been congratulated by the Council on the passing of the Veterinary Surgeons Act, and he thought they were well justified in thus congratulating them, and they had very properly given honour to whom honour was due, namely, to their worthy President. (Hear, hear.) This led him to certain reflections in connection with the Council. He did not wish to be a firebrand at this meeting, but he did not think they could do better than have a thorough understanding on all matters, and when the Council as a body congratulated the members of the profession on the very important work that had been successfully carried out during the last two years, taken in connection with the correspondence on the question during that period, one might well ask whether the Council were unanimous in congratulating the members of the profession on the very important work that had been accomplished. At a meeting like the present they were quite justified in making known what were the feelings of the members of the profession generally with reference to any particular work the Council may have performed in their interests during the period covered by the report; and he was sure they were all thoroughly agreed that they owed a very deep debt of gratitude for the zeal, tact, and ability that the President had brought to bear on this very important matter. Probably without any such exertions on the President's part the profession would not have been in the position it was now in; and while the profession thanked Mr. Fleming, they would also thank the members of the Council who supported him loyally and well. He thought, however, they must discriminate in this matter. They were not justified in thanking the members of the Council as a body, inasmuch as it seemed that some of them did not support the President; and therefore he, as a humble individual, while thanking most heartily the President and members of the Council who did support him, he must, with all deference and respect, and with every desire to give freedom of action to members of the Council who did their duty, except those who opposed and endeavoured to thwart the carrying forward of the measure. It was quite true that the members of the Council were not delegates, but it was also true that they were representative men, and he thought it was well that they should bear that in mind, and if they did not feel themselves in a position to represent the general wishes of the profession he thought, at any rate, they were not justified, while they held the position of Councilmen or representative men, in going outside the wishes of ninety-nine out of every hundred members of the profession which they represented,

and endeavour to inflict very great injury on the profession. He did not make these remarks in any ill-feeling; he only wished to speak straightforwardly and honestly, and he hoped nobody would be offended.

Mr. DOLLAR differed from Mr. Owles, and remarked that there was nothing before the meeting in connection with the passing of the Veterinary Surgeons Bill; and if Mr. Owles' remarks were to have any weight at all, a discussion would be opened up and they would not be in time for dinner. He entirely deprecated the remarks that had been made, and would answer them if the meeting thought proper. The gentlemen who had taken a part in opposing the measure had been greatly misrepresented. They had been the means of improving the Bill very largely. (Cries of "No, no.") He held that they had been, in spite of what might be said. If there were any more remarks made in this direction, he should certainly answer them.

The PRESIDENT thought that the subject was a perfectly legitimate one for comment, because the meeting was called to discuss the work of the Council during the last year; nevertheless, he should be the first to deprecate any attempt to introduce a discussion on it now. Certain events did happen in connection with the passing of the Bill, but he thought the Council had wisely omitted in its report all reference to them. He would say, what was past, let it be past. Those gentlemen who had thought proper to take a different view from the majority of their colleagues were, no doubt, animated by the best intentions. He gave every member of the profession the credit of being actuated by the best intentions in anything he did for the welfare of the profession. He could not imagine any man so base, so treacherous, or so dishonest, as from personal motives to prejudice the interests of the profession, in order to indulge his own pique. He thought it would be most unfortunate if anything was said at the annual meeting, or any other meeting, in the way of personalities. They were at one in their objects, and had a laudable desire for the elevation of the profession, and for its maintenance in an efficient condition; and if personal matters were to be introduced at these meetings, he would say that they, as a united profession, could not longer exist. He therefore thought that the report as drawn up should be allowed to stand, and that the question of what happened at the Council in connection with the Veterinary Surgeons Bill should not be raised, but that the opinion expressed by the Council in regard to that Act should be taken to be the honest opinion of the collective Council. (Hear, hear.)

Mr. WILSON asked if the President was willing to strike out that portion of the report referring to the matriculation examination.

The PRESIDENT said that he had already explained that the subject was still under discussion by the Council. It need not be struck out or alluded to at the present meeting. By the time the next meeting was held the subject would have been completed, and it would then be for the profession to express their opinion as to whether the Council had done wisely or not in the matter.

Mr. WILSON said he should like to take the sense of the meeting upon the question, and he would propose that so much of the report as referred to the matriculation examination be referred back to the Council for consideration. He believed the next meeting took place at Edinburgh or in Dublin, and many of them would not be present to receive and discuss the report on that occasion. He did not see that it was desirable to have one law for England and another law for Scotland.

Professor BROWN pointed out that the report was a simple record of the proceedings of the Council during the year. He quite agreed with what Professor Robertson and Mr. Owles had said, but he did not see why the Scotch and Irish schools were put in and the English schools left out.

Whatever the reason was, the matter had to be determined upon. It was incompetent for the present meeting to make any suggestion on the subject other than opposing or entirely rejecting it. He thought that if it was understood that this matter was to be discussed with the clear understanding that the meeting was in favour either of the omission of that clause or the introduction of the Royal Veterinary College at Camden Town, then the report might be passed; but he did not see the least advantage to be gained by the proposal that any part of the report should be omitted. All they had to say was whether the report was a fair and honest statement of what the Council had done during the past year. (Hear, hear.)

The PRESIDENT pointed out that Mr. Wilson's motion had not been seconded.

Mr. WILSON said that all he desired was to have an understanding from the Council that there was to be one uniform examination of the whole body corporate.

The PRESIDENT said that the scheme had not been adopted by the Council, but was only under consideration. The sole object of bringing forward such a scheme was to ensure a uniform matriculation for all the graduates of the Royal College of Surgeons. The scheme would be discussed at an early meeting of the Council.

In answer to Mr. Glover, the PRESIDENT said that the omission of the word "England" in paragraph 5, under the head of "Matriculation Examination," before the words "Scotland or Ireland," was purely accidental.

Professor PRITCHARD said he observed that in the report of the Fitzwygram Prizes it was said that, "Notwithstanding the continued exhortations to students to compete for these very valuable prizes, it is to be regretted that only one candidate presented himself for competition." He could not quite understand this, because he was informed by word of mouth, and also in black and white, that there were several candidates who wished to present themselves for examination for these prizes.

The PRESIDENT said that these prizes were rather beyond the province of the Royal College of Veterinary Surgeons, but the donor was animated with the best intentions towards the profession when he offered them. The number of competitors who presented themselves he did not know anything about, but on every possible occasion when he (the President) had been present at the distribution of the diplomas, he had exhorted students to compete not only for those prizes, but also for the very handsome prizes offered by the Highland and Agricultural Society. He looked upon it as a reflection on the profession that there were not more competitors, because he thought the prizes were extremely handsome. He himself had left no stone unturned to secure a large competition for the prizes; and he thought he only expressed the feelings of the profession when he added that it was somewhat of a disgrace that the competition for both these prizes was not larger and more enthusiastic. In his student's days he thought it would have been so; whether the students or graduates nowadays had degenerated or not, he did not know.

MAJOR-GENERAL FITZWYGRAM thought that what Professor Pritchard referred to was some dissatisfaction that had been felt by some of the students not having received proper notice. All he could say was that the notice was published in the veterinary journals, and he himself had also written to the different schools. In reference to a little dissatisfaction that had been manifested in regard to the terms of the competition, it was not his (Sir Frederick's) fault if the students did not take the trouble to read such terms when published.

Mr. BOSWELL said he observed among the list of honorary associates the name of Professor Smith, of Toronto. Professor Smith was a personal

friend of his, and he begged to thank the Council on his behalf, and on behalf of all the students of the Toronto Veterinary College, for the honour which had been conferred upon him.

Mr. DRAY then proposed the adoption of the report as amended. Professor WALLEY seconded the motion, which was carried unanimously.

Mr. WILSON proposed: "That the best thanks of the profession be given to the President for the very excellent manner in which he has passed the Veterinary Surgeons Bill through Parliament." He was sure that the whole of the profession, even those who might differ from Mr. Fleming, would ultimately see how beneficial the passing of the Act was to them as a body.

Mr. DRAY seconded the motion and also bore testimony to the indefatigable exertions that had been made by the President towards the passing of the Act.

The resolution was carried by acclamation.

The PRESIDENT, in returning thanks for the compliment paid him, said that, animated by the strongest feelings to do his duty to the profession, he certainly worked as hard as he possibly could to make the passing of the Act a success. He had been largely and abundantly seconded by the members of the Council, and also by very many members of the profession outside the Council. But for the assistance he had received from those gentlemen, it would have been utterly impossible for him or for any other individual single-handed to have carried such a gigantic measure. The position of the veterinary profession in this country had not hitherto been a very favourable one; they had had to fight their way unsupported and under very great discouragement, and therefore to ask for such privileges as were granted in the Act was certainly a very strong demand to make; but their rapidly rising position in public estimation, and the high character they held as a profession in the country, had great weight with the Legislature. The Act would place the profession in a position such as perhaps it did not hold in any of the countries on the Continent of Europe. It must, however, be remembered that the benefits which the public and the profession were to derive from the Act depended altogether upon their own exertions. They must prove themselves to be worthy of the protection and the privileges that they had received, and he was quite convinced that the public would not be slow to perceive that a wise act had been done in conferring upon the profession such privileges.

On the motion of Mr. SIMPSON, seconded by Prof. WALLEY, the annual balance-sheet was received, and no remarks having been made upon it, on the motion of Mr. GOWING, senr., seconded by Mr. HARPLEY, it was unanimously adopted.

This concluded the business of the meeting.

REPORT OF PROCEEDINGS AT A SPECIAL MEETING OF COUNCIL HELD ON THE 23RD MAY, 1882.

Present: Mr. George Fleming, F.R.C.V.S., in the chair; Sir F. Fitzwygram, Messrs. Axe, Anderton, Brown, Blakeway, Batt, Dray, Greaves, Harpley, Pritchard, Perrins, Reynolds, Simonds, Santy, Simcocks, Simpson, Taylor, Whittle, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the previous special meeting were read and confirmed.

Election of President.

Mr. DRAY said that in obedience to the will of many members of the Council, the pleasing task had devolved upon him to propose a gentleman to

fulfil the duties of President of the Royal College. The paramount duties which Mr. Fleming had undertaken, and had so well performed, and which had led to such satisfactory results, ought to be a guide to the members of the Council in their selection. One of Mr. Fleming's achievements was the obtaining of the New Act, which he had done amidst immense difficulties. He had also organised a deputation to wait upon the Lord President of the Council, which consisted of members of the House of Lords and the House of Commons, and some of the *élite* in science and literature; and he (Mr. Dray) fearlessly said that there was no other gentleman in the profession who could have collected so many different forces to attend the meeting. Therefore, it was only fair, just, and expedient that Mr. Fleming should be re-elected. He had steered their ship well, notwithstanding quicksands and adverse winds, and he had brought her safely into harbour. Another reason why Mr. Fleming should be re-elected, was because next session would be a most important one, and they required as President a gentleman with a clear head and great tact and judgment, in order to guide and direct them with reference to the new Act in regard to registration. It had been said that, "Gratitude is dead and buried;" let the Council show to the profession and the public that they did not believe in that assertion, by this day re-electing Mr. Fleming as President of the Council.

Professor SIMONDS said he rose to introduce the name of a gentleman who, he thought, was eminently qualified to fill the office of President, and in doing so he was sure the Council would acquit him of any desire to place Mr. Fleming on one side, because they owed him a great debt of gratitude, which they could never repay. He thought, however, that the time had now gone absolutely by for legislation, and that it was now administration that was wanted. For this purpose they wanted a gentleman of talent, a man of experience, who would devote his time as earnestly and as efficiently to the duty of his position as Mr. Fleming had done; and he thought that they would have everything they could possibly desire in the gentleman he was about to name—Professor Robertson. He thought it was due to the position he occupied that Professor Robertson should be elected; it would be the right thing to do. He was sure he would be acquitted of wishing to say anything in disparagement of the great services—if he might use the expression—which the Army had rendered to the Council. They were certainly under obligations to them, and owed a great debt of gratitude to that service; and to no members of the profession were they under a greater debt of gratitude than to Sir Frederick Fitzwygram and Mr. Fleming. Admitting that most fully, he thought the time had arrived when they should choose out of their own ranks, as it were, a president to preside over them for the forthcoming year.

Mr. GREAVES said that before this was put to the vote, as one of the oldest members of the Council, he might be permitted to say that it had been an understanding that the provinces should not be altogether thrown aside. It had been considered a fair and proper thing that a provincial veterinary surgeon should have the honour of the presidency conferred upon him during one year, and the representative of the London veterinary surgeons for another year. The provinces had now been five years without having had an innings. It had also to be remembered that the provinces contained about 1,800 members; and he thought that, upon the face of it, it was not fair that the President should so often be elected from the body of the profession in London. He thought that the feeling of the outside members of the profession, as well as the members of the Council, should be taken into consideration. The feeling throughout the profession was that the Council did right in electing Sir Frederick Fitzwygram for three years in succession, and in electing Mr.

Fleming for two years. He believed the whole country would be with them if they re-elected Mr. Fleming for the ensuing year, for this reason, that he had work in hand which he (Mr. Greaves) believed that no other man understood as Mr. Fleming did, and that work could not be executed so well if the present President did not continue to occupy the chair. He respectfully suggested that it was not the time to elect a professor nor another Army veterinary surgeon to fill the office of President. If any change were made at all, it ought to be by electing a provincial veterinary surgeon. However, at present he would suggest that Mr. Fleming be re-elected, and that next year a provincial should be elected, and no one would present himself so prominently before their eyes for such a position than his friend, Mr. Peter Taylor.

The ballot was then proceeded with, and in the result it was found that Mr. Fleming had ten votes and Professor Robertson six.

Mr. Fleming was therefore re-elected.

Mr. FLEMING, in returning thanks for his re-election, said, he deemed it right to say that he had not himself in any way moved in the matter, but had left it entirely with the Council and the whole body of the profession. He would have wished that some one as able, or more able than himself, had been elected, because the duties of President, if performed aright, were very onerous. The two years of his office, so far as anxiety and work were concerned, had been the most exacting period of his life; but he could assure them that, having re-elected him, he would promise them the same energy, zeal, and ability that he had hitherto exercised on behalf of the profession. A remark had been made that civilians should this year be represented; but he was not aware that he had ever put himself forward at the Council as anything else than a civilian practitioner. His labours had been as much for the civilians as the military, and he always looked upon it that there should be no distinction between civilians and military in the profession. He would do his utmost to carry on the duties which appertained to the chair, and especially to complete the work which had been commenced during his years of office. That work had not been entirely his own: it had been largely that of the Council. It had been sanctioned and entirely approved by the whole body of the profession. He had been largely supported by a large majority of the Council, and he was sure, looking to the accessions the Council had received in its new members, he would obtain the same steady support which had hitherto enabled him as President to carry out the work of the Council. He thanked them heartily for the honour they had done him.

Election of Vice-Presidents.

Mr. Wragg, Mr. Cox, Mr. Cartledge, Mr. Woods, Mr. Cartwright, and Mr. Broughton were elected Vice-Presidents.

Election of Treasurer.

On the motion of Mr. Greaves, seconded by Mr. Batt, Mr. Dray was unanimously re-elected Treasurer.

Mr. DRAY, in returning thanks for his re-election, took occasion to express his satisfaction that Ireland was represented on the Council, in the person of Mr. Simcocks.

Mr. SIMCOCKS said he felt very much honoured at being elected a member of the Council, not so much on his own account as the section he represented. A more able representative might have been elected; but he would venture to say, without being egotistical, that no one would be more willing to work and more punctual in his attendance than he hoped to be.

Election of Secretary.

Mr. DRAY said he had great pleasure in proposing Mr. Hill as Secretary. He had had an opportunity of witnessing how well he attended to the duties of the Council.

The PRESIDENT said the profession and the Council had been well served by Mr. Hill. Such two years of hard work as the Secretary had undergone he would not, perhaps, wish to undertake again in a hurry. He himself had been ably supported by Mr. Hill, who had shown great earnestness, ability, and willingness to work. His duties had been very heavy indeed, and required much watching and attention, and he thought the profession was fortunate in having such a Secretary.

Mr. Hill was unanimously re-elected.

Mr. HILL, in returning thanks said that, as long as he had the honour of serving them, his best endeavours would be used to promote the interests of the profession.

A vote of thanks to the President for his conduct in the chair terminated the proceedings.

THE ANNUAL DINNER OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE annual dinner was held at the Albion Hotel, on May 1st, and was more largely attended than usual. Among the guests were Earl Fortescue; Rt. Honble. A. J. Mundella, Vice-President of the Privy Council; Lord Arthur Somerset; Col. Milne Home, Royal Horse Guards; Professor Flower, F.R.S., LL.D.; Dr. Quain, F.R.S.; Professor Voelcker; Dr. Cameron, M.P.; Dr. Farquharson, M.P.; Dr. Roy; Professor Yeo; J. D. Dent, President, Royal Agricultural Society; Dr. Townsend; H. M. Jenkins, Esq., and Captain White. The President, George Fleming, Esq., occupied the chair.

After the usual loyal and patriotic toasts, the Chairman proposed the House of Lords and the House of Commons, and in referring to the immense value of the labours of these Houses to the country and civilization, he desired that, in coupling with the toast the names of Earl Fortescue and Mr. Mundella, two distinguished noblemen to whom the profession owed a deep feeling of gratitude, but who unfortunately could not be present—Earl Spencer and Lord Aberdare—should not be forgotten. Their names would ever be associated with the most memorable event in the history of Veterinary Science in these kingdoms. To Mr. Mundella, also, they were indebted for invaluable service at a critical time, in pressing the Veterinary Surgeon's Act through, at the end of last Session, when its passing was almost hopeless. Without his aid it would undoubtedly never have seen the light.

Earl FORTESCUE responded for the House of Lords, and speaking of the value of veterinary medicine, he alluded to the recent deputation to the Lord President, which was composed of men famous in many of the kindred branches of science; thus showing how closely interwoven are the various branches of natural science. It was, he said, a happy augury for the progress of Veterinary Science, that all these gentlemen should have shown such a cordial sympathy, and such a desire to co-operate with the veterinary profession.

Mr. MUNDELLA, in responding for the House of Commons, said: I cannot disguise from myself that the kindly reception which you have accorded to my name, is mainly due to the fact that I was able to render you some small service in the last Session of Parliament. Now, let me say to you

frankly, that I think you little know how much you owe to the names of the noble lords who have been mentioned in eulogium by your President—I mean Lord Aberdare and Earl Spencer. Earl Spencer is really, as has been truly said, a friend of your profession ; he is a friend of science and humanity, and he felt that the interests of those animals to whom we are indebted for our very existence, and for so much of the enjoyment of our lives, are very much better taken care of by competent veterinary surgeons than by every "butcher, baker, or candlestick-maker" that may undertake the task. I must confess to you that when my friend, Lord Aberdare, came down to me, and asked me to carry your measure through the House of Commons—knowing somewhat, perhaps, of the dangers of navigating a Bill through that House, and how the dangers had increased of late years—I felt considerable trepidation in undertaking the task ; but I told your President I would do the best I could. I was induced to do this, from the fact that I am in daily contact with the Veterinary Department of the Privy Council ; and I can assure you I have learned to realize how much the Department has done, and is doing, to preserve the flocks and herds of this country, and to give the poor farmer the only stand-by he has had of late years—something like health for his cattle. I am glad to believe that the efforts of the Department have had the result of bringing the flocks and herds of this country into a more healthful condition than they have been in for the last quarter of a century. I believe you are grappling this moment with diseases which lie within the aid of your science, which you cannot, perhaps, entirely stamp out, but which you can reduce to a minimum ; and I can conceive of no greater blessing to this country, and nothing that will more enhance the agricultural interest than to preserve in health the fine breeds of cattle, sheep, and horses that we have. As I said, I undertook your Bill with some trepidation ; but I was encouraged by my friends in the Privy Council, and by a friend whose name I hope you will allow me to mention—Mr. Lennox Peel, Clerk of the Privy Council—to take a very warm interest in that measure. And so exceedingly anxious was I to see your profession put on a right basis, that I determined to do what I could to carry the measure through ; and although nearly defeated, sometimes by a hair's breadth, and at last we escaped by "the skin of our teeth," it was a comparative pleasure to me at the end of the session to contribute something that was useful to your profession. I do not believe that anybody has ever mentioned your Act as one of the achievements of the present Parliament until I came into this room. However, gentlemen, these modest achievements are sometimes amongst the most useful ; and there are a good many useful schemes at this moment in abeyance because Parliament is in that state of disorganization to which your President refers.

The remainder of Mr. Mundella's speech was devoted to political matters of the day.

Mr. COLLINS, in felicitous terms, proposed the "Royal Agricultural Society," coupling with the toast the name of Mr. Dent, its President, and also referring in complimentary language to the "Highland and Agricultural Society of Scotland."

Mr. DENT, in reply, spoke encouragingly of the efforts of the Royal College of Veterinary Surgeons to raise the status of the profession by training scientific men who could not only cope with disease by treatment, but also prevent it. He hoped the Royal Agricultural Society would, so far as its limited means allowed, co-operate with the Veterinary profession in their researches, not only in the treatment of diseases, but in discovering their source. He would be glad if less money was spent on exhibitions of stock, and more on scientific researches.

The CHAIRMAN proposed the toast of the Royal College of Physicians

and Surgeons, and in doing so pointed out the close relationship between human and animal pathology, regretting they had been so long kept apart in this country, but hoping that before long Comparative Pathology would constitute an integral portion of medical education. With the toast he included the names of Dr. Quain and Professor Flower, President of the Zoological Society, and Curator of the Royal College of Surgeons.

Dr. QUAIN dwelt on the great importance of Veterinary Science, and the interest the medical profession took in its advancement, as the study of diseases in animals could not fail to add immensely to the knowledge possessed of the diseases of man. Alluding to his position as Chairman of the Brown Institution and the Anti-Vivisection movement, he mentioned some of the benefits obtained from experiments on animals.

Professor FLOWER stated that the Royal College of Surgeons had always recognised the importance of the study of the anatomy of animals in connection with the anatomy of man, and by means of its museum and lectures had endeavoured to disseminate that knowledge, as well as the relations that exist in the pathology of animals and man. He deemed it a great honour that he had been asked to accompany the deputation to the Lord-President, the objects of which he hoped would be attained. He always looked back to the short period in which he had the honour of being an Examiner of the Royal College as one of the most agreeable and satisfactory periods in his life, as he made many friends among the Examiners and Members of Council, including Mr. Fleming.

Dr. QUAIN proposed the "Royal College of Veterinary Surgeons," asserting that no one present could feel its value and importance, and the eminence of its President, more than he did. Declining the attempt to trace the history of the Royal College, he desired to speak of its important present position. Last year it obtained, through the exertions of Earl Spencer, Mr. Mundella, and Mr. Lennox Peel, an Act which has placed the profession in a position which it ought to have held long before. "It has a name now, and it only wants a local habitation. . . . I believe we shall live to see Veterinary Science second only to the science which treats of the diseases of man himself. With an earnest hope and wish for the advance of the Royal College of Veterinary Surgeons, I beg to couple with the toast the name of its distinguished President."

The President replied to the toast.

Lord ARTHUR SOMERSET proposed the toast of the "Veterinary Schools," which was responded to by Professors ROBERTSON and WILLIAMS.

Professor SIMONDS proposed the "Examiners," and in the course of his remarks insisted upon the necessity of retaining chemists, botanists, and physiologists as Examiners.

Professor VOELCKER and Mr. CARTLEDGE replied.

Professor BROWN proposed the "Visitors," coupling with the toast the name of Mr. Lennox Peel, who was a real friend to the profession.

Mr. PEEL returned thanks, commenting at some length on the progress recently made by Veterinary Science, and the interest which his department, with the Lord-President at its head, took in everything relating to it.

Mr. J. L. SIMPSON proposed the health of the President, Mr. George Fleming, and passed a high eulogium on the character of that gentleman, recounting the many benefits he had conferred upon the profession, both before and during his tenure of office as President, referring especially to the exertions he had made in securing the passing of the Veterinary Surgeons Bill, which, he was sure, would prove of great benefit, not only to the profession itself, but to the country at large.

The PRESIDENT returned thanks in suitable terms, alluding in the course

of his remarks to the efforts that had been made by himself and colleagues to bring the profession into the position it now held.

The evening's proceedings were enlivened by the excellent music discoursed by professional vocalists, and the dinner committee must be complimented upon the brilliant success of their arrangements.

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of Council of the above was held on April 24th, at 10, Red Lion Square. Present, Mr. J. Woodger, jun., President; Messrs. H. T. Batt, A. Broad, A. Charles, A B. Daniel, G. Fleming, H. J. Hancock (Treasurer), W. Hunting (Secretary), J. Rowe, F. Samson, H. K. Shaw, C. Sheather, and F. W. Wragg.

Mr. Wm. Hunting tendered his resignation of the Secretaryship, the Council accepting the same.

Mr. Alfred Broad was elected Secretary for the remainder of the year, on the proposal of Mr. SHAW, seconded by Mr. FLEMING.

On the receipt of an encouraging financial report from the Treasurer, the President proposed to add the sum of £100 to that already invested.

The subject of the publication of the minutes was then fully discussed, and it was decided to send an abstract of the proceedings to the journals, the question of separate publication being shelved.

The attention of the meeting being called to a footnote in the VETERINARY JOURNAL for January, the Secretary was requested to cause it to be notified in the above Journal that it was by the direct sanction and authority of the Council that Mr. Hunting communicated with the Secretaries of the other Societies with regard to a joint publication of their Transactions.

The monthly meeting of this Society was held on the 4th May, at 10, Red Lion Square. Mr. Rowe, a Vice-President, occupied the chair; also present were Messrs. F. W. Carlisle, G. Dudgeon, G. F. Samson, C. Sheather, H. Caton, R. Glover, Hall Brown, J. Broad, Arthur Broad, Alfred Broad, and A. J. Sewell, visitor.

After preliminary business, Mr. ROWE exhibited an os suffraginis, upon which was a small orifice in the upper articular cartilage; it communicated with a larger excavation beneath. He merely wished to hear whether it was the opinion of the Fellows that the disease was of long standing. The specimen was from the hind extremity of a white-legged bay horse. Lameness had been severe and recurrent, with tumefaction around the joint. Much extravasation was found, also purulent infiltration. Mr. Rowe expressed his opinion that in cases of recurrent lameness there was usually disease of the articulation.

Mr. SHEATHER said he had noticed how especially susceptible to disease were the white legs, more especially, perhaps, in chestnut or bay horses. He considered the specimen interesting; it showed an advanced stage of inflammation in the cancellous structure.

Mr. BROAD considered it of interest also from the analogy to be drawn between it and the navicular bone. There was in this case disease of the bone, and the damage to the cartilage was clearly secondary.

Laryngismus Paralytica.

Mr. ROWE said it would be a difficult task to now recall and discuss Mr. Sheather's Essay, but he hoped some valuable ideas would be forthcoming.

Mr. BROAD considered, that whenever the problem of the cause of this disease was solved, the practical task so ably brought forward by the Essayist would materially help this solution. Most of us had been content to say, simply that the cause of Roaring, in this form, was paralysis of the left re-

current nerve; we are asked to consider what is the cause of this paralysis. He inclined to the view that it was injury to the nerve in its connection with the bronchial lymphatic glands, and he considered the most common precursor of this was Strangles. It was remarked that the form of the disorder under discussion was often hereditary, also that some descriptions of animals were much less subject to it than others. He thought these facts explainable on the supposition that what was transmitted was the tendency to suffer more severely than usual from glandular affections, and that those animals most exempt from the disorder would be those which had not this tendency. He was of opinion that the cause would be found to be less complex than the Essayist had stated, as the disease in this form was so definite and constant.

Mr. SAMSON said that Roaring was hereditary in many instances. He had seen it follow Laryngitis, Influenza, and Sore-throat. Cart-horses were less susceptible than the higher classes. He rode a valuable mare to hounds when she was not in fit condition; she fell ill in a few days and became a "Roarer." The mare is now in first-rate condition and does not roar so badly; she is worse when kept too warm, and when the atmosphere is damp and foggy. He asked for data as to the amount of exertion of which a horse is capable with a tube in the trachea.

Mr. CATON said this would depend upon the degree of severity of the disease. With a tube an inch, or an inch and a quarter across, he knew horses perform cab and omnibus work. He recommended the "Field" pipe, provided the attendant is capable of re-inserting it. Some will pass the pipe between the trachea and the muscles; with the ordinary pipe this could not happen.

Mr. GLOVER illustrated the inconvenience of opening the trachea at the original place, after healing had occurred; ossification of the cartilage was found. He said Mr. Sheather argued that, in consequence of the longer course for the nerve current on the left side, the left muscle received its stimulus later, therefore would have extra work to do; but he would say that the left arytenoid muscle arriving late at the work would have less to perform, no action counteractive to that of the right would be required of it. If such were the case all domestic animals would suffer, though it is to be admitted they have not equally to exert themselves. Among a number of horses but a small percentage are "Roarers."

With regard to Mr. Sheather's theory that the left nerve is exhausted through the large demands made upon the pneumogastric nerve by the stomach and respiratory organs, in taking more fibres from its left portions, he thought the same remarks applied. A nerve was made up of distinct fibres from various sources, and was it proved that, if a nerve coming from one tract of the nervous centre was unduly taxed, nerves originating near it would receive weaker stimulus? He urged that it might be that the atrophy of the laryngeal muscle was due to a local cause, the condition of nerve being an effect.

Mr. BROAD said that in the ordinary cases the cause could hardly be local, seeing that it was almost invariably the left side which was at fault. Many practitioners look to local injury of the larynx for the cause, and some give medicines to combat the atrophic changes in the muscle; but he thought we should look to the other end of the nerve for the origin of the mischief. Mr. Fleming in his Essay said that he, as well as several Continental authorities, had traced injury to the nerve in its connection with the bronchial lymphatic glands.

Mr. CATON had experienced difficulty in reopening the trachea on account of ossification. He had known "Roaring" occur in cows, mostly in the best breeds, and in tuberculous subjects from induration of the parotid gland. In one case he had given relief by tracheotomy.

Mr. GLOVER endeavoured to keep the opening of the tube as small as practicable. In one case, to which he referred, water escaped through the trachea each time the animal drank.

Mr. HALL BROWN had a horse that did a great deal of work while wearing a tube, till eventually "Roaring" recurred. Another horse worked eighteen months with a tube in the trachea. He thought for such horses the pace ought to be slow.

Mr. ROWE said we seem agreed that successful treatment is rather the exception than the rule. He referred to the crib-biters' strap, and asked whether Roaring was found to follow Crib-biting. He also alluded to the nose clip as formerly used, and thought that if we could assist the ala nasi we might give relief to the animal. He thought that more careful dissection might prove that atrophy of muscle was not the only pathological symptom. There was, he said, a great deal in Mr. Sheather's statement that "Roarers" did better in Hansom cabs, due to the intermittent feeding and regular work. He called upon the Essayist to reply.

Mr. SHEATHER said, I cannot support Mr. Broad's idea that the cause of Laryngismus Paralytica is constant; the state of the atmosphere, or of the animal's stomach, will affect the breathing. Much less is the cause mechanical, as injury from glands; it would require to be proved that at different times the bronchial glands press upon the nerve more than at others, and thus account for the variations in the Roaring; pressure on the nerve must produce a constant result. If the left recurrent nerve runs risk of injury anywhere, it is between the first ribs and here the right nerve shares the risk. After Strangles we get Roarers, but why do not more ponies become affected, since they also suffer from Strangles? That Roaring is hereditary there is no doubt; transmission of peculiarities, and even impulses, from parent to offspring, is a common occurrence in the human subject. Mr. Samson's case supports my views. With regard to tubes in the treachea, I have heard of a horse winning a race with one; also, I have known a horse to be ridden to hounds in the same condition. Mr. Glover has not exactly represented my views. I said that in a state of nature the conditions of nerve-supply were amply sufficient, but under the circumstances of domesticity the late arriving current was a predisposing cause why the left side of the larynx should first suffer. The horse's work especially taxes the respiratory system; his feeding is not as Nature intended; instead of constantly moving, and feeding on succulent food, with water at long intervals, he receives highly nutritious food, and in a dry state; he is not watered often enough to compensate for the want of succulency in his diet; the whole of the pneumogastric system is tried to its highest pitch, and the weakest link will be the one to fail.

The position of the larynx is of consequence; a distortion of it towards the right brings the left vocal cord into greater opposition to the incoming air, influencing the sound. Mr. Glover says a vast number of horses are similarly fed and managed, and few fail in this way. I say that under those conditions Roaring should not be expected; regular work and dieting are antagonistic to the disease.

Crib-biters are said to frequently become Roarers; this supports my theory, as the habit in many cases arises from indigestion. As to nasal clips, if you obstruct the passage you lessen the noise, but at the same time diminish the quantity of air entering the lungs, and add to the animal's distress. If proper attention is paid to every detail in the management of "Roarers," vast improvement may be effected. Mr. Fleming successfully applied Faradization to the course of the left recurrent nerve; this I think strengthened the weak current, and enabled the muscle to regain its power.

A vote of thanks to Mr. Sheather for bringing forward his Essay was proposed and carried unanimously.

A. BROAD, *Hon. Sec.*

THE IRISH CENTRAL VETERINARY MEDICAL SOCIETY.

THE second quarterly meeting of the above society was held at the Hibernian Hotel, Dawson Street, Dublin, on the 20th ult. There was a most encouraging attendance.

Mr. T. D. Lambert, F.R.C.V.S., President, in the Chair. There were also present :—Messrs. James D. Lambert, A.V.D. ; J. Bell, Clonmell ; P. H. Bird ; W. C. Joseph ; Matt. Hedley ; J. Freeman, Kingstown ; P. Lawlor ; A. J. Kelly ; Thos. H. Simcocks, Drogheda ; T. G. Tuite, Oldcastle ; G. B. Miller ; H. T. B. Ashbee ; J. Malcolm, Enniscorthy ; J. Preston, Mallow ; A. G. Ross, A.V.D. ; F. F. Collins, late P.V.S. Indian Army ; J. J. Sperring, hon. secretary.

The SECRETARY, having read the minutes of the last meeting, which were confirmed and signed, proceeded to lay before the meeting several letters of apology from members of the Society for their non-attendance, and some business details having been gone into, the members present proceeded to the election of some new candidates, with the result that the following gentlemen were unanimously elected members of the society, viz. :—Messrs. Jas. D. Lambert, Inspecting V.S., A.V.D., Dublin ; James, Ashe, Cork ; Geo. Newsom, Arklow ; R. B. Prentice, Longford ; M. Murphy, Dublin ; F. F. Collins, late P.V.S. Indian Army ; H. O'S. Keyes, Limerick ; James Young, Newry.

Mr. A. G. ROSS, of the Army Veterinary Department, then proceeded to read his paper on "Melanosis," as follows :—

Mr. President and gentlemen,—The honour of reading the first paper to the C.V.M.A. of Ireland having been accorded to me, with your forbearance I shall now proceed to my task. My long connection with the 2nd Dragoons, better known in history as the "Scots Greys," which, as you know, is exclusively mounted on grey horses, has given me special opportunities for studying this disease ; for I assert and maintain that it is a disease, called "Melanosis." In Mr. Meyrick's paper on soundness, read by him before the International Veterinary Congress of 1881, he said that Melanosis, under certain circumstances, was not an unsoundness ; but, gentlemen, much as I respect the opinion of any member of the profession, especially one holding so high a position as Mr. Meyrick does, I still go by my own experience and observation, notwithstanding who may try to controvert them. Mr. Meyrick says :—"Melanotic tumours of a small size are sometimes seen in horses not more than four or five years old. They very rarely cause any injury or inconvenience until the horse is sixteen or eighteen years old. They may, therefore, be hardly considered as unsoundness, though a possible cause of unsoundness after many years' service. I may here remark that I do not believe in the usual theory that Melanosis is of a cancerous nature. I think it is simply a collection of the dark pigment cells that are usually confined to the skin, hair, iris, and the more externally situated parts of the mucous membranes."

Professor Williams says that a melanotic tumour has all the specialities of cancer. See his work ("Principles and Practice of Veterinary Surgery"), page 391. He quotes from Professor Spence, who says that in the lower animals it is not malignant ; while it is so in the human subject. He also quotes from Paget, who says :—"In the horse and dog, I believe, black tumours occur which have no cancerous character ; but none such are recorded in human pathology." Melanosis is generally confined to aged animals, but I have seen it manifested in a five-year-old grey horse. (I have seen it in a three-year-old, and become rapidly developed in various parts of the body.) The treatment of Melanosis is early removal, when it, as well as other cancers, may be checked for a time ; but, as already stated, its

recurrent nature is so great as to preclude the hope of permanent eradication." I do not look upon Melanosis as of a cancerous nature, but I am well aware that it may and sometimes does assume a cancerous form, unless particularly carefully attended to. But, gentlemen, I am aware that civil practitioners have not the facilities for carefully attending to and controlling the treatment of their patients that an army veterinary surgeon has. Melanosis is a most insidious disease, and may exist in the system without showing any outward or visible symptoms. I have met with it in the mesentery, in the intestinal canal, in the liver, in the lungs, in the spleen, and I have even seen it in the diaphragm. We all know that the usual site is at the termination of the intestinal canal, showing itself more externally. We also find it in the tail and mane, frequently in the parotid glands, and on the spine under the seat of the saddle. When it is in the *internal* organs my experience is that the tumour consists of a round, dry, hard black ball about the size of a walnut to that of a marble. When I have investigated it on the parotid glands, mane, or tail, I have found it to be of a more diffused character. This disease is found almost solely in grey horses, but I have seen it in horses of other colours. When I have found diffused tumours I have seldom found the round ones.

Why horses called grey should be special victims to this disease I am at a loss to say. In the human subject it is stated by very high authority that it is a cancerous disease; but so far as I have been able to learn, it is not in our species confined to any particular class of persons. May it not be, therefore, that when cancer has set in from constitutional diathesis the black pigment is deposited as an effect, without having had anything whatever to do with the cause of the disease? Of course, we all know that it is due to a deposit of the black pigment contained in the system, which is usually deposited in particles throughout the system, and which colours the hair, being deposited on one spot, thereby leaving the hair without colour and forming a hard, dry mass of a powdery consistence in some particular spot, and enclosed within a cist, as a rule.

We all know that grey horses become whiter with age, but the worst cases of Melanosis that I have ever met with have been in those horses which were of the lightest colour in their youth. When one makes use of the expression "a grey horse," most persons jump to the conclusion that it describes a horse of a particular colour, but it certainly does not do so, for there is as great variety in the colour of grey horses as there is in the colour of all other horses, the only difference being that in the case of a grey horse there are a few white hairs intermingled with the others. Of course, we know that there are some horses which may be described as decidedly grey; but where would you draw the line? If you call a chestnut grey a "roan," what would you call a black grey? and how would you decide as to the proper denomination of a brown grey? Most colours are determined by the muzzle, but greys, as a rule, are determined by their mane and tail. If we put it down that a horse is grey because he has a few white hairs interspersed through his coat, could we not say a chestnut with a white face is grey? I think many horses of every colour have more white hair on them than so-called greys. Perhaps I am wandering from my subject; but I am doing so for the purpose of showing that it is not the horses that have the most white that are most liable to this disease, and why it should be so I cannot say. It is only where the white hairs are dispersed throughout the whole coat that they become so. Now, I look upon this as a curious fact, and one that deserves further investigation. When I first joined the "Greys" the band was mounted almost, I might say altogether, on piebalds and skewbalds. Before I left, to my great regret, that most distinguished regiment (recollect, I am a Scotchman), I never had a single case of

Melanosis among the band horses, although some of them were from sixteen to twenty years old, and were cast solely for age. It has always been an unsolved problem in my mind why the dispersion of white hairs should be an almost infallible precursor of this disease, and that the agglomeration should give exemption.

Upon one occasion, when I had the honour to be invited as an hon. member to the meeting of the Yorkshire Veterinary Medical Association, a gentleman present, a most influential member of the profession, related a case of a horse which he had under treatment for debility, and upon which, he stated, that he had exhausted every means within his knowledge to restore to health and strength, but had failed. If my memory serves me, I think he said that nine months had elapsed since he first had the case under treatment, but he stated that although he could detect no actual symptoms of disease, the patient continued to pine and waste away. Having experience of such cases myself, I asked what was the colour of the patient in question, and had for reply that it was "grey." My next question was, is it an old or a young horse, and whether dark or light in colour. Being informed that it was a young horse and light in colour, I suggested that the cause might be "Melanosis," the tumours being deposited in the mesentery, thereby interfering with the proper assimilation of the food partaken of by the animal. The gentleman in question and the others present accepted this as a very feasible explanation of the case. Unfortunately, I had no opportunity of ascertaining whether such was really the case in this instance, owing to my having to accompany my regiment to Ireland shortly afterwards, but from my experience in like cases I have no doubt it was. Frequently I have found horses, although undergoing no extra work, but, on the contrary, being well fed, and doing, I may say, nothing, pine and waste away in spite of every care and the administration of tonics, etc., until at last an attack of Enteritis has carried them off. The *post-mortem* has revealed melanotic tumours in the mesentery, liver, spleen, and sometimes in the intestinal canal, without the slightest external symptom of Melanosis having existed in the system during life.

I have searched the *Veterinarian* and other authorities as far back as 1829, and I find in the volume of that journal for 1839, page 138, a most interesting account of this disease, in which it is stated:—"Of the muscles of organic life the heart is the only one that has been found is a state of Melanosis, and there is only one case of this on record." It also states "that it is often found in the lungs, but never in the brain." In the main I agree with the above, because it has been my experience that the pigment is not embedded in the muscular tissue, but is generally found in the glands and subcutaneous tissue. In the volume of the *Veterinarian* for 1840, page 163, I find that B. Phillips, Esq., F.R.S., who lectured on this subject in 1839, says, "It is a pathological production deposited upon the surface of our organs (he is, of course, talking of the human subject), of a darkish or blackish colour, having no analogy with the healthy tissues of the body." See *Veterinarian*, 1840, page 163. Professor Dick mentions a case in a bay horse. See *Veterinarian*, 1842, page 333. A tumour 36 lbs. weight is mentioned in *Veterinarian*, 1840, page 164. I confess I never saw a single tumour anything approaching to this weight, but I may state that if *all* the tumours contained in the body of some of the horses which I have examined were weighed together, they might approach the weight above-mentioned. It has been stated that Melanosis may be hereditary. Doubtless it may be considered so, because if the parents are grey the offspring are likely to be of the same colour, therefore it may be said that the colour being transmissible, the disease is also inherited; but my experience is that if the offspring should be of a different colour the disease is no more liable to

occur in them. Although I have said that I do not consider the disease hereditary, I may tell you that if a chestnut and a bay, or a black and a brown, or any other two colours produce a grey, the disease is sure to develop itself sooner or later. On the other hand, I have found that if two greys produce a piebald, a black, a bay, or a brown, the offspring of these two greys is not more liable to the disease than those produced by a black and a bay, or a brown and a chestnut.

Now, gentlemen, having talked so long to you about the nature of the disease, I would wish to give you some insight into the treatment that I have adopted, and which I have found exceedingly successful. If you find a well-defined tumour, with a neck to it, take it off with the ecraseur, without fear or favour, in the same way that you would remove any other; but if you find a different tumour, I can only give you Punch's advice to those about to marry—don't. If, as has been my lot upon several occasions, you find an open sore, and called upon to treat the same and render the animal fit to resume duty, gently squeeze and sponge from day to day until all the black pigment is removed, after which it may be cauterized or dressed with a strong caustic—Nitrate of silver or Chlor. of zinc, and then I have always found that the wound will become healthy and heal up without trouble; in fact, I may state that it may be treated as an ordinary wound once the pigment is got rid of.

Gentlemen, I am not going to tell tales out of school, but I was told that I had chosen a subject that few of us know much of. Well, gentlemen, has not this society been instituted for our mutual advancement? I think that I ought to get credit for having chosen this subject. Why, I thought, and still think, that this society was for the purpose of mutually imparting knowledge to each other, and I chose this subject as I thought you would kindly accord me some special knowledge on it, and I hope, and may say I feel sure, that the gentlemen who read papers before this society will do the same. What would be the use of a society for mutual information where only time-honoured recipes are to be repeated?

In my humble opinion, any one of us who reads a paper should bring forward a subject upon which the majority of us are not conversant, and in this way the society will be the means of doing that which I believe and hope it was intended it should be the means of doing, namely, the imparting of special knowledge from one to another.

Gentlemen, I have done, and I beg to tender you my thanks for having so patiently heard me, and I trust you will criticize freely the paper which I have had the honour to lay before you, but kindly give me credit for having done my best to aid the interests of this society.

Mr. HEDLEY opened the discussion on the paper, and quoted extensively from Professor Williams's writings on the subject.

Mr. MALCOLM followed, and in reply to his query as to how melanotic sores could develop into a cancerous form, Mr. ROSS explained that it might occur through neglect, and by the irritation caused by the discharge.

Mr. JAMES LAMBERT, A.V.D., gave an interesting account of several cases of Melanosis which he had specially treated, and quoted largely from his experiences with regard to the disease—both when a student at the Imperial Veterinary School at Alfort, and subsequently during his service in the army.

The PRESIDENT also related a recent instance in his practice of successful treatment of a melanotic abcess, which developed itself from pressure of the collar in a harness horse. He treated it by opening it freely, and thus getting rid of a large quantity of pigmentary matter, keeping it thoroughly clean, and injecting turpentine liniment. All traces of it passed away in a fortnight.

The subject of the paper was then discussed by several other members.

Mr. HEDLEY exhibited an interesting morbid specimen, consisting of one kidney of a pig, which had been transfixed in its long axis by the bristle of an ordinary stable-broom, and the foreign body had evidently been in the position in which it was found for a lengthened period, as a complete sheath had formed itself around it.

A cordial vote of thanks to Mr. Ross was proposed by Mr. JOHN FREEMAN, seconded by the SECRETARY, and carried with acclamation; and a very enjoyable meeting was brought to a close.

J. J. SPERRING, M.R.C.V.S., *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting was held at the Blackfriars Hotel, Manchester, March 29th, at 5 p.m. Present,—The President, Mr. Alexander Lawson, in the chair. Messrs. Thomas Greaves, Peter Taylor, Thomas Taylor, W. Whittle, G. Morgan, C. W. Elam, W. A. Taylor, Sam. Locke, Tedbar Hopkin, J. Bunnell, J. Hart, H. Fergusson, W. Dacre, J. Litt, E. H. Leach, A. M. Michaelis, E. Faulkner, and J. B. Wolstenholme; also, as visitors, Messrs. Bridge, Kirkman, Noar, Wormald, and Duckworth.

Letters of excuse where received from G. Fleming, Esq., Professors Robertson and Walley; also from Messrs. J. W. T. Moore, H. Thompson, W. Leather, and T. H. Dollar.

The minutes of the last meeting were read and confirmed.

Mr. Thomas B. Cockshoot, M.R.C.V.S., of Hyde, was elected a member of the association; and Mr. W. Hy. Bridge, of Bolton, was nominated for election at next meeting.

Mr. Sam. Locke, the late Secretary, then laid upon the table a letter of condolence to be forwarded to the widow and family of the late Mr. James Brookes, of Pilkington, near Manchester, in accordance with resolution of December 15th last; the members present were very much pleased with the elegant and well-executed letter before them. The Secretary was deputed to wait upon Mrs. Brookes and present the same.

The Secretary then read a circular letter signed by Mr. Geo. A. Banham, Hon. Sec. of the last Veterinary Congress, asking that the subject of the desirability of a British National Veterinary Medical Association (forming), should be discussed at their meeting; after some discussion the following gentlemen were appointed as a sub-committee, to consider the question and report, viz., the President, with Messrs. Thos. Greaves, Thos. Taylor, and the Secretary.

MR. W. A. TAYLOR then called the attention of members to the fact that in January next, this association will attain to its majority, in other words, have been in existence twenty-one years; and he thought that the event should be marked by some celebration.

The members generally expressed approval, and on the motion of Mr. Thos. Greaves, seconded by Mr. Peter Taylor, the following gentlemen were elected as a sub-committee to promote and arrange some scheme to this end, viz., the President, with Messrs. E. Faulkner, T. Hopkin, T. Taylor, W. Dacre, S. Locke, Jno. Lawson, W. A. Taylor, and the Secretary.

A member then read a pamphlet which had been given to him by a client, it referred to a "new method" of castration; was couched in very puffing language and accompanied with testimonials; it was addressed to owners of stock generally, and was signed by Ben. H. Russell, Captain, late 18th Bengal Lancers, Fellow Royal College Veterinary Surgeons; in the discussion which followed a number of the members expressed their surprise and indignation, that a Fellow of the College, and a president of a Veterinary

Medical Association (*i.e.*, the Midland), should stoop to such an unprofessional course, and one which can only bring with it disgrace upon the entire profession; ultimately the following resolution was proposed and carried unanimously—"That this society views with great dissatisfaction the unprofessional and empirical manner in which Mr. Russell seeks the patronage of the public."

Some remarks were then made on the custom, which was spreading, of druggists advertising and selling compounded Veterinary medicines to the general public, but further discussion was postponed.

The next business was the resumption of discussion on Mr. G. Morgan's paper on the Examining Board; this gentleman opened the debate by a brief recapitulation of the salient points, and concluded his remarks with the questions which terminate the paper, viz.:—

1st. Should the Examining Board be composed entirely, or as far as practical, of Veterinary Surgeons?

2nd. Should any *paid* Examiner be also a member of council?

3rd. Is it desirable to try Honorary Examiners in branches of the Examination?

A very animated and lengthy discussion followed, one in which every member of the association present took part, this being especially desirable in view of the election of the Board of Examiners this year.

In the first place the members expressed their gratitude for the help afforded our profession by the sister one, and by the various specialists; but they were unanimously of opinion that the time had now arrived, when the profession was capable of conducting its own examinations without any extraneous aid.

To the second query the majority thought it undesirable that an examiner in receipt of fees, should also be a member of council.

The last inquiry provoked a greater diversity of opinion than either of the former, the general feeling being that in those subjects in which the veterinary surgeon is daily gaining experience, and in his professional routine has opportunity for extending his own views and those of others, that it was desirable to try Honorary Examiners, the meeting being of opinion that, as in the case of members of council, the post would be regarded as conferring a dignity and an honour upon the possessor, who in this case would be a gentleman of maturer years; but with the subjects of the other examinations, subjects somewhat outside daily practice, as physiology, botany, etc., which would require from the examiner extended and progressive reading, it would seem to be more suited to younger practitioners, and the majority present thought that it would be unwise to withdraw from these gentlemen some remuneration for their time and services.

Letters on this subject were received and read from Prof. Walley and Mr. B. Cunningham, and the discussion was closed by Mr. Morgan in reply.

Mr. WILLIAM DACRE then related a most interesting case of a pug dog which had bolted a piece of *ligamentum nuchæ* about 2½ sq inches in size. It had become impacted half-way down the neck; no other treatment being available, he at once made section and removed, simply readjusting the lips of the wound in the œsophagus, using no sutures, then closing the skin incision, and retaining it with carbolised gut sutures; no food was given for three days, after which a milk diet was allowed, and complete recovery has followed. There does not appear to be the slightest stricture of the œsophagus, as the dog bolts hard crusts, etc., with ease; the dog and the offending portion of ligament were examined by members present.

The same gentleman also read notes on a number of cases of Corneitis which had occurred in a flock of sheep. The cause appeared to be that of

an insufficient supply of nutritious food during the winter months, and the increased drain on the system during pregnancy; for on separating the diseased and allowing a more liberal diet, they all recovered, whilst the remainder being also better fed did not become affected.

Mr. DACRE also exhibited a dissection of the larynx of a horse; this had been made in order to note its condition, as the animal in life had been a "roarer." It was readily observed that the superior laryngeal muscles of the left side were atrophied as compared with their fellows on the opposite side, but what added greatly to the interest of this preparation was the discovery of two well-marked glanderous ulcers, one on the epiglottis and the other at the base of one of the *chordæ vocales;* the horse was *not* known to have been the subject of Glanders.

Mr. Dacre's cases were received with great interest, and the thanks of the meeting were given to him.

Mr. WOLSTENHOLME exhibited under the microscope a number of *acari* obtained from the legs of a mare affected with mange. The *arachnidæ* corresponded with those figured at pp. 412 of Fleming's "Sanitary Science" as the "Symbiotes Spathiferus" of Mégnin, the males having eight bell-shaped ambulatory sucking discs, and two well marked posterior prolongations in the form of "spaths"; these latter are absent in the female, and she is possessed of only six ambulatory discs.

JOHN B. WOLSTENHOLME, *Hon. Secretary.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held in the Veterinary College, Buccleuch Street, Glasgow, on 26th April, at 4 p.m.

Present:—The President, Mr. Pottie, occupied the chair; Professor McQueen, Glasgow; Charles Winslow, Veterinary Surgeon, Cor. Plain and Market Street, Rockland, Mass.; R. Rutherford, Edinburgh; Campbell, Kirkcudbright; Lindsay, Alloa; Weir, Airdrie; Kerr, Dalry; Douglas, Dunoon; Messrs. Robinson, Greenock; Macfarlane, Greenock; Macfarlane, Doune; Blue, Mearns; Taylor, Cathkin; Peddie, Cathcart; McCall, Govan; Wyper, Partick; Messrs. Weir, Currie, Mitchell, William Anderson, jun., Robb, Wallace, McNicol, and the Secretary, Glasgow.

The minutes of the previous meeting having been read and confirmed, the President then read a letter from Mr. Rutherford, Secretary Scottish Metropolitan Veterinary Medical Society, desiring that this Society should join along with them, as also the members of the Scottish Central Veterinary Medical Society, that is, that the three societies join, and call a meeting once a year for the purpose of discussing subjects, etc., each society taking their turn in calling the annual meeting. The President then moved that this proposition be carried, seconded by Mr. Anderson, jun., and agreed by the other members present.

The President then called on Mr. Robinson, sen., to occupy the chair, while he (the President) made a statement about Dr. Russell's report on the carcases from Elderslie. After which several of the members gave their opinion on the matter, but, ultimately, Mr. Robinson, jun., was of opinion that the subject was more of a private nature, and he would move that the subject be dropped, which was adhered to.

Mr. MITCHELL, Glasgow, then read the following paper on "Castration":—

The subject which I have chosen for my essay to-day, that of Castration, is one of special interest to the Veterinarian, especially when we find any method or means by which it can be performed more speedily, and with as little pain as possible to the subject which is to be operated upon.

It is quite unnecessary for me to go into any details of the older methods

which were adopted in generations gone by, some of which were very primitive and extremely barbarous. I think it is very much to our credit that they have been superseded by more scientific and humane measures. Our first object in performing this operation (of course you infer it is the horse I am speaking of) is to determine at what age this ought to be done. The man who confines his views to the simplicity and safety of the operation rightly argues the earlier the better. My own opinion is that the operation should be performed previous to the first ascent of the testicle—any time from one month till the fourth month. The animals grow larger and better, no check being given to the system at this early period. This is, however, a matter we seldom get the chance of settling, as the owner generally takes this in his own hands, and the first intimation we have is to come and operate. I have operated at all ages under fourteen years, and I may say never had any bad consequences arisen from the fact of the animal being aged.

The next object is the method to be employed in securing the animal. Shall he be cast, or left standing on his feet? I think, under certain conditions, both modes may be advantageously used. In the first place, if we are going to cast him, I will draw your attention to a set of rope hobbles here, which, besides being very cheap (costing only a few shillings), are very portable in going distances, easily put on, and secure. There are five used; two on the off fore-leg, and one on each of the others. The rope is passed from the near fore-foot, through the lower ring on the off foot, through the off hind, to the near side, through the near hind; it is then brought forward again, and brought from outside inwards, through the upper ring on the off fore-leg. When pulled, the animal falls where standing, and a hitch being put on the near hind-foot, the rope is carried under the back, and the animal being turned up, the legs are flexed as much as possible, a hitch is placed on the off hind-foot, and you have him secured.

If we prefer to do him standing, the first thing is to get a corner where to place him. The ground should if possible be earthen, to prevent slipping. A ring and staple are driven into the wall, about two feet from the ground, and somewhat behind the fore-arm. A twitch being put on, the rope is first put through the ring in the wall, till the eye catches on the under side; it is then brought over the neck in front of the withers, back through the eye, and tightened; one man can hold twitch and rope, and another, placed at the haunch to steady him, are all the assistants required. It is rarely any attempt to kick is made. If it should be attempted, by tying a piece of small rope on the one hind-leg at the hock, or near the fetlock, and twisting it till we meet the other leg, when it is firmly tied, the attempt will be entirely frustrated. After stroking the animal down, the scrotum can then be grasped and made tense, both sides being taken in the hand at the same time. By a couple of free incisions from before, backwards, the testicles are freed. At this point the animal appears to lose all control, and sometimes sinks down before we get our clam, ligature, or ecraseur, put on. By loosing the collar rope a little, we can get him on his feet again, and they are not so ready in going down the second time.

Now that the animal is cast, or secured standing, our next object to determine is by what means the testicles are to be removed. This is a point upon which many opinions exist. Every practitioner has his own particular method; some that of firing, others scraping, ligature, clam, torsion, or ecraseur. The more immediate object of this essay is to bring before your notice this instrument, the ecraseur, and its superiority over all other methods yet within our reach, for the performance of this operation. So soon as the testicles are liberated from the scrotum, you put the chain over one or both, as you please (I always put both), and having the testicles even,

the chain is placed up about an inch above the *epididymis*, taking in the whole cord, vascular and non-vascular. The chain is then pulled home, and the slack being speedily taken in, with a few turns more of the handle both testicles drop off at our feet. No hæmorrhage takes place, and no after-treatment is necessary, except the keeping open of the wounds, and plenty of exercise. Full-grown animals over four years old are generally fit for work within ten days from the date of operation.

Cryptorchidism.

I will now, with your permission, draw your attention to the subject of Cryptorchidism, or Rig Castration. When Farmer Miles made his appearance at my house on the 1st of May, 1880, I was a little astonished, having had no communication from him as to an exact date. I had several cases waiting for him, and as he had to go north next day, I could not get them done before his return. We made our first visit to Messrs. Murray and Co.'s, Port Dundas Road, who had a bi-lateral or double rigling, five years old, heavy draught animal, and vicious. He was at work, but was sent for. In the course of half an hour he arrived. While waiting I sent to inform Professor McCall, and any others interested. Messrs. McGill and McQueen came over, and were witnesses of the operation on both sides, as I shall hereafter describe. In securing an animal for this operation, a deal of time is taken up; at least from ten to fifteen minutes being necessary to get the ropes fixed in their proper positions. I will not here attempt to describe how the ropes are put on, as I do not think it could be impressed upon the memory, except by actual demonstration, which I shall be very glad to do at any time. Suffice it to say, that the fore-legs are fixed, and the feet tied to the neck-rope, the hind-legs being flexed till the pasterns come down and rest upon the stifle, or nearly so, thereby expanding the pelvic region to its fullest extent. The spreader is then applied between the pastern and hock on the metatarsal bows, and assists very materially to keep the parts separate and steady. We then take up a fold of the skin a little in front of the inguinal ring, with the left hand, and making it tense, the hook point of the knife is put through it, and the skin cut or torn open for about six inches. By using the two fore-fingers, an opening is made into the inguinal canal through the ring, after which a little olive oil will be of service in making further progress. If the testicle be not embedded in the ring, we must then take the fingers of one hand and gather them together cone-shape, and by a rotatory motion, an entrance to the canal is effected. At this part of the operation, any undue haste or loss of temper, upon the part of the operator, would probably frustrate any attempts to go further in quest of the body for which you are in search. After getting over this difficulty, with a little caution you work your way forwards, and inclining outwards towards the blade of the ileum. Perhaps before you get that length, you will have accomplished your object by laying your hand upon the testicle; this is the inguinal form. The testicle will be small, perhaps very small, not so large as a pigeon's egg. It may have the *tunica reflexa* loosely round it, like a piece of intestine; or it may be devoid of all covering, not even the *epididymis* being present. After getting hold of it, with steady traction you will generally get it outside; if not, you can slip in the ecraseur, and screw it off internally. But suppose you have not yet found it, you must proceed onward still, and gliding your hand gently over the surface of the peritoneum, you will most likely feel some slight swelling in some of the folds. Take the fore-finger, and puncture it over the swelling, and most likely you will find it to be the testicle floating at the touch of your finger; if so, put another finger through and secure it; then bring it with you in the same manner as already described. All the

after-treatment necessary is to wipe the parts with a towel, and pour in a plentiful supply of oil. The animal must have immediate and daily exercise.

I trust, gentlemen, that my essay has been instructive. I have no doubt from the discussion which will now take place, or from some idea one of you may take home to think over hereafter, that in a short time rig castration will be as simple and as easily performed as ordinary castration at present is.

A short but interesting discussion followed, in which Professors McQueen and Rutherford; Messrs. Robinson, Campbell, Robb, the President, and others, took part.

Mr. ROBINSON, sen., then proposed a vote of thanks to the Essayist, after which the meeting terminated. ED. C. HILL, *Secretary.*

MONTREAL VETERINARY COLLEGE.

THE annual commencement of the Montreal Veterinary College took place on March 30th. Prof. Osler addressed the graduates, giving them some excellent advice as to their future, urging them to continue their studies and to take notes of everything as they went through life, that being the only way great discoveries in science were made. The following gentlemen having fulfilled the requirements of the curriculum and passed the successful examinations, written and oral, in botany, chemistry, physiology, cattle pathology, and practice of veterinary medicine and surgery, received the diploma of the college:—

A. J. Chandler, Coaticook, Quebec; Walter Wardle, Montreal; Alexander Glass, Philadelphia; Fred Torrence, Montreal; C. B. Robinson, Middlemarch, Ontario; Joseph M. Skally, Boston; D. E. P. Campbell, St. Hilaire, Quebec; Paul Paquin, St. Andrew's, Quebec; Olivier de Maisonneuve, Terrebonne, Quebec; Philias F. Labelle, St. Dorothee, Quebec; Pierre Gadbois, Terrebonne, Quebec.

The following prizes were distributed:—

Silver medal for best general examination.—A. J. Chandler.

Special Prize for General Proficiency.—Alexander Glass.

Microscope for Practice of Veterinary Medicine and Surgery.—A. J. Chandler.

Second Prize.—Fred Torrence, B.A.

Obstetrics and Cattle Pathology.—First Prize, A. J. Chandler. Second Prize, Walter Wardle.

Anatomy.—First Prize, Walter Wardle. Second Prize, A. J. Chandler.

Entozoa prize won by Fred Torrence.

Dentistry prize won by C. B. Robinson.

ONTARIO VETERINARY COLLEGE.

THE annual examinations of the students in attendance at the Ontario Veterinary College were brought to a close on April 21st. Dr. Smith, the principal, occupied the chair, and Mr. Duncan discharged the duties of secretary. Over one hundred students and graduates were present to take part in the proceedings, which were of the most enjoyable and enthusiastic character.

PRIZEMEN.

The following is a list of the successful students to whom prizes were presented:—

Pathology.—Silver medal, T. B. Cotton; second prize, W. A. Dryden; third, J. T. Claris.

Anatomy.—Silver medal, W. A. Dryden; second, J. Hugo Reed; third, Lyman Vandervoort.

Entozoa.—Prize, D. P. Yonkerman.
Microscopy.—Prize, C. W. Stowe.
Physiology.—First Prize, J. Hugo Reed; second, D. P. Yonkerman.
Chemistry.—First prize, J. Hugo Reed; second, D. P. Yonkerman.
For Anatomical Preparation.—Prize, W. Parkins.
Materia Medica.—J. Hugo Reed (senior), first prize.
Breeding and Management of Live Stock.—First prize, 20 dols., given by the Commissioner of Agriculture, J. Hugo Reed; second, 15 dols., given by the Agricultural and Arts Association, T. B. Cotton, and 10 dols. to J. N. Cook.

The gold medal, for the best general examination, was presented to Mr. J. Hugo Reed, of Georgetown, Ontario.

GRADUATES.

The following is a list of the students who graduated this year:

W. S. Bell, Kars, Ontario; L. D. Blanchard, Mount Eaton, Ohio; H. G. Borneman, Clayton, Pa.; J. L. Brodie, New London, Iowa; G. W. Burt, Lynnvalley, Ont.; J. T. Claris, Buffalo, N.Y.; R. C. Clark, Wellesley Village, Ont.; J. N. Cook, Glanford, Ont.; S. J. Cottam, Edinburgh, Scotland; T. Bent Cotton, Mount Vernon, Ohio; W. A. Dryden, Tavistock, Ont.; F. Goulding, Richmond, Mich.; G. H. Hall, Chatham; J. Hodgins, London, Ont.; J. D. Johnston, Wahoo, Nebraska; J. Lawson, Acton, Ont.; W. G. Lyons, Cheltenham, Ont.; Alex. McDonald, Cobourg, Ont.; J. G. McInally, Lynnvalley; W. McLain, Nanticoke, Ont.; W. Parkins. Beeton; C. A. Pierce, Creston, Illinois; A. Porteous, Simcoe, Ont.; J. Price, Pine Lexington, Penn.; J. H. Reed, Georgetown, Ont.; W. T. C. Scanlon, London; C. L. Smith, Silver Cliff, Colorado; H. H. Sutherland, St. Francisville, Ill.; B. F. Swingly, Oregon, Ill.; A. Tanner, Drayton, Ont.; W. Tanner, Mount Forest, Ont.; F. A. Thomas, Paisley, Ont.; L. Vandervoort, Trenton, Ont.; A. A. Walker, Wingham, Ont.; J. A. Waugh, Pittsburg, Pa.; W. J. Waugh, Pittsburg, Pa.; A. E. Wessel, Wooler; J. Whytock, Teeswater; T. Wrigglesworth, Georgetown; D. P. Yonkerman, Cleveland, Ohio.

An address of a highly complimentary character was delivered by the Hon. Adam Crooks, who spoke of the excellent work which was being done by the college, in the success of which his colleagues of the Ontario Government took a deep interest. It afforded him the greatest pleasure to be called upon to take part in the presentation of prizes to the students. He resumed his seat amidst applause.

Addresses of a similar character were delivered by Prof. Buckland, Prof. Barratt, Prof. Thorburn, Mr. Wade, and other gentlemen, each of whom bore testimony to the good work which was being done by the college.

NEW VETERINARY COLLEGE, EDINBURGH.

PRIZE LIST.

THE winter session of this institution terminated on the 17th of April, when a meeting was held in the theatre of the college for the purpose of distributing the prizes to the successful competitors.

Professor Williams occupied the chair, and in opening the proceedings expressed himself as much gratified at the satisfactory condition of the affairs of the college. He stated that the number of students on the roll for the past session was one hundred and forty-five; and that the classes had increased to such a degree that the accommodation afforded by the present building was no longer sufficient to meet their requirements. He should shortly be obliged to provide larger and more suitable premises.

The prizes were then distributed as follows :—

The £20 prize given by the Principal to the student who passes the best first and second examinations.—Mr. J. Finlayson, Gourock.

Horse Pathology.—Medal.—Mr. T. D. Connockie, Selkirk ; Certificates of Merit were gained by Messrs. J. Finlayson, and W. Edmondson, Manchester.

Cattle Pathology.—Medal.—Mr. J. F. Murray, Tralee. *Certificates.*—Messrs. W. Edmondson, and T. D. Connockie.

Anatomy.—Medal.—Mr. J. Hickes, Stockton-on-Tees. *Certificates.*—Messrs. C. Gresty, Tattenhall ; W. R. Davis, Douglas ; and P. J. Culhane, Charleville.

Physiology.—Medal.—Mr. W. R. Davis, Douglas. *Certificates.*—Messrs. T. A. Porteous, Fisherrow ; and Haslam, Manchester.

Natural History.—Medal.—Mr. Haslam, Manchester. *Certificates.*—Messrs. Connockie, Porteous, Murray, Greenhalgh, and Forgham.

Chemistry.—Medal.—Mr. Haslam, Manchester.

Educational Medal. — Mr. Haslam. *Certificates.* — Messrs. Nadal, Mauritius ; Borthwick, Kirkliston ; Carroll, Charleville ; and Allen.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At the several meetings of the Scottish Section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Glasgow and Edinburgh on the 10th, 11th, 12th, 13th, and 14th April, the following students passed their "Final Examination" and received the Diploma :—

Mr. J. D. Gemmell.
„ James Martin.
„ Archibald McNicol.
„ *John Renfrew.
„ J. G. Dickie.
„ Benjamin Hoadley.
„ Joseph Hughes.
„ William Wallace.
„ T. D. Connochie.
„ J. F. Murray.
„ *Robert Cockburn.
„ T. E. Horrocks.
„ E. L. Ackroyd.
„ Frederick Hood.
„ *John Finlayson.
„ J. G. Bell.
„ *C. Burston.
„ George Fimms.
„ W. J. Smith.
„ P. D. Reavy.
„ Thomas Horton.

Mr. John Freeland.
„ John McLean.
„ Andrew Carnduff.
„ A. M. Crighton.
„ T. F. Alston.
„ *W. A. Macgregor.
„ J. S. Bond.
„ P. D. Kelly.
„ *W. F. Greenhalgh.
„ Joseph Abson.
„ John Brizell.
„ Richard Jones.
„ *Walter Edmondson.
„ *George Phelan.
„ Peter Dalling.
„ *J. M. Carroll.
„ Tom Harrison.
„ James Wade.
„ D. McArthur.
„ D. S. Prentice.
„ *T. J. Mitchell.

Mr. L. W. Delacherois.

The following students passed their "Second Examination" at the meetings of the Scottish Section of the Court of Examiners, held in Edinburgh and Glasgow, on the 17th, 18th, 19th, and 20th April :—

Mr. Thomas Cunningham.
„ John Japp.
„ George McArthur.

Mr. Charles Smart.
„ J. R. Dykes.
„ William Hacket.

Mr. *Henry Fulham.
„ Thomas Rochfort.
„ *Kenneth Urquhart.
„ *Robert Hickes.
„ Anthony McCormick.
„ W. H. Hood.
„ *Patrick Culhane.
„ *B. A. Clavey.
„ Colin Campbell.
„ John Philip.
„ John Airth.
„ Arthur Stringer.
„ *Colin Gristy.
„ David Hamilton.
„ John Baxter.
„ Henry Tweedley.
„ P. W. Carnachan.
„ *James Laithwood.
„ John Reid.
„ T. L. Houston.
„ †Arthur New.
„ J. D. Fitzgerald.
„ *Henry Holroyd.

Mr. *M. Lornie.
„ William Kirk.
„ Alexander Waugh.
„ M. Browne.
„ *H. M. Maxwell.
„ *D. J. Barry.
„ James Platt.
„ Richard Bolster.
„ *J. A. Meredith.
„ *Harry Young.
„ *W. R. Davies.
„ *M. H. Hayes.
„ F. P. Carter.
„ Alexander Forsyth.
„ Arthur Plant.
„ Frederick Jones.
„ *Samuel Hirst.
„ J. M. Johnson.
„ *Alexander Brown.
„ *T. Marriott.
„ John Holland.
„ William Frazer.
„ *James Spalding.

The following passed their "First Examination" at the meetings of the Court of Examiners, held in Edinburgh and Glasgow, on the 1st April :—

Mr. *J. F. Dixon.
„ James Fairclough.
„ H. Smith.
„ John Nicolson.
„ *George Ellison.
„ T. J. Wooff.
„ A. B. Crowhurst.

Mr. A. F. Darkie.
„ J. Thomas Crosby.
„ T. W. Dinwoodie.
„ R. H. Potts.
„ W. J. Jones.
„ Frederick Airey.
„ *N. T. Doyle.

Mr. Timothy Daly.

* Marked thus passed with Great Credit.
† Marked thus passed with Very Great Credit.

FITZWYGRAM TESTIMONIAL.

It was arranged that the presentation should be made by the Chairman of the Committee, Professor Simonds, at the annual meeting of the R.C.V.S., but as the business meeting was over earlier than usual, and he had not arrived, Mr. Greaves was requested to present it. He spoke as follows :—

Major-General Sir Frederick Fitzwygram,—Noble and respected sir,—In presenting you with this "Testimonial Portrait" and a duplicate to be hung up in the Council-room with an inscription on each attached, allow me to say it is a small memento which we ask you to accept from a united veterinary profession. It emanates purely from the great respect and high appreciation we feel towards you. It is but a poor offering, if compared with the great services you have rendered our profession, or with the deep feeling of gratitude that fills our hearts ; but we trust it will be some gratification to you to know that your untiring efforts to serve us, and raise our profession, will be warmly cherished in our memories to the end of our lives. We can never forget that it is to you, to you chiefly, if not to you alone, that we are indebted for now enjoying the inestimable privilege of being a united profession. You, sir, we have to thank for inducing that

competitive examining board, the Highland and Agricultural Society of Scotland, to discontinue its action. It is to you, sir, that we are indebted for that great privilege of being able to give our votes for members of Council by voting-papers, instead of having to attend personally at the annual meeting in London to record them. It is to you that we are indebted for the supplemental charters; also we have to thank you for the munificent prizes your great kindness offers to the students annually, with the laudable intent to cause them to strive and attain a higher knowledge, to become more eminent, and by this means raise our profession to a higher status, and thus be deserving of a greater and higher respect than it has hitherto ever had accorded to it. But this is not all, nay, not half the goodness and kindness you have shown towards us during the three years you so kindly consented to occupy the presidential chair of the Council of the Royal College of Veterinary Surgeons. We felt it to be a privilege and an honour to be guided by your wise counsel and advice. There have been occasions and times when your happy tact and clear judgment have delighted us, and led us to adopt measures most useful to our profession, and which will be associated with your name as long as the veterinary profession exists; also as a governor of the Royal Veterinary College, your services to our profession have been very great. Indeed, even our Sovereign, seeing the high qualities you possess, and your great experience, has placed you in one of the highest posts of honour and influence in the Army. We earnestly hope and trust that your life may be long spared, that you will have health and strength to continue to help us, that your life may be a bright, sun-lit pathway through a delightful land, and when in joy and gladness you reach your home at last, oh, may it be in "that serener clime where all is joy and peace."

Upon the scroll on each portrait is the following inscription:—

"Presented to Major-General Sir Frederick Fitzwygram, Bart., by the members of the Royal College of Veterinary Surgeons, as a mark of their high esteem and gratitude for his untiring efforts to advance their interests, especially during the three years he occupied the presidential chair, 1876, 1877, and 1878.

"Professor SIMONDS, *Chairman.*
"H. J. CARTWRIGHT, *Treasurer.*
"THOMAS GREAVES, *Secretary.*"

General Sir FREDERICK FITZWYGRAM said: I thank you with all my heart for this token of esteem which you have so kindly presented to me, for this recognition of what you have been pleased to call my services to the veterinary profession. I have done my best with all my heart, and with all earnestness, and with all the energy I possessed, to endeavour to serve the best interests of a profession which I love. I love it, not only for its services to man, but for its services to those lower animals of God's creation which are under our special charge. I was attracted first of all to the veterinary profession by a man of very kindly manners, well known to the veterinary profession—the late Mr. H. Allen, who was veterinary surgeon to the regiment I originally joined. He was a man of great tact, and exerted an influence on all the young members of the veterinary profession. Some years afterwards I was in Edinburgh, and made the acquaintance of one of the most remarkable men whom veterinary surgery has produced—I mean the late Professor Dick—a really original man. Although some of his ideas may be considered antiquated now I do not know of any man connected with the veterinary profession who I considered attained a higher pedestal than the late Professor Dick. Being at Edinburgh I naturally became a student of his school, and, I need scarcely say, a warm adherent of the Clyde Street School. Time passed by, and I went to different places, and heard different sides of the question; and, largely owing to the influence

of the late Professor Varnell, I found there were two sides to the question—the Royal Veterinary College *versus* the Clyde Street School. I found that I was not altogether right, and that the profession would be better for having one school instead of having two; and I gave my adhesion to the Royal College of Veterinary Surgeons, and I have endeavoured to bring about that union which happily has now been accomplished. In that chair I proposed to bring about what Mr. Greaves has alluded to, namely, a corporate union in the profession by means of voting papers, what I may call the restoration of professional influence of the Council, which had hitherto been to the detriment of the profession and too largely shared by those who lived in the great metropolis. That scheme commended itself to the Council and was carried through without much trouble, and I may say that it has worked for the good of the profession. Another point to which I attached great value was the term during which young men studied at our Colleges. Speaking from some little experience I think the time given for study was far too short to turn out men of practice as well as men of science. To that scheme for increasing the length of the period of study the Colleges, although it was somewhat detrimental to their own interests, gave a ready and loyal adhesion. Then, of course, there was in consequence an increasing stringency in the examinations, and I think your examiners have a right to demand that those who come up for the diploma of the Royal College should be men of education, both in science and practice. People need a stimulus, I do not say it in any hostile sense, but your schools need a stimulus in the way of a searching examination. I believe that a strict examination, and putting people on their mettle, very largely adds to the best interests of any profession. The principal object I had in view was the union of the profession; that is to say, drawing into the body corporate the members of the Highland and Agricultural Society. To that proposal there was somewhat more opposition, both on the part of the R.C.V.S. and the Highland and Agricultural Society than I had at first expected; but gradually, I am glad to say, the two bodies acquired confidence in each other, and the consequence was the incorporation of the Highland and Agricultural Society into the body of the Royal College of Veterinary Surgeons. And now, speaking at the end of three or four years, I believe there is not a single member of the Royal College of Veterinary Surgeons who in any degree regrets the incorporation of their brethren holding the Highland and Agricultural Society's certificate. From that has followed the Act of last year, which has made the veterinary profession into one of the recognised and legal learned professions of the land. It is for us and for the profession to see, or not to see, the great advantages which we now enjoy, as such a legally-recognised profession; and, speaking now, after the deputation to the Lord President of the Council, I think I may venture to say that the leading men of the country begin at length to recognise the value of the veterinary profession, both as regards the diseases of animals, and largely as regards the cognate diseases of men, as most important to the agriculture of the country, the food of the nation, and the welfare of the lower animals which are under our charge. Gentlemen, you have been fortunate this year in your president, and I hope that you may, in years to come, be equally fortunate. I look upon the position of President of the Royal College of Veterinary Surgeons as the most honourable object of ambition which any veterinary surgeon can strive to attain; and I hope that we shall ever see in the chair of this great and rising profession a man whose scientific attainments may be a guarantee for the advancement of the profession, and one who may commend himself to the confidence of the public. I beg heartily to thank you for your presentation; I shall cherish it, and will look upon this day as one of the brightest and happiest in my life.

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PROF. SIMONDS, *Chairman.*
H. J. CARTWRIGHT, *Treasurer.*
THOMAS GREAVES, *Secretary.*

Obituary.

THE death is reported, at fifty-one years of age, of J. Ireland Collings, M.R.C.V.S., who graduated in 1853, and had practised continually in Plymouth up to his decease. Mr. Collings was local Inspector under the Veterinary Department of the Privy Council, as well as Inspector for the borough authorities. He had a very extensive practice in Plymouth and neighbourhood, and was held in high esteem for his professional and personal qualities.

John Carless, M.R.C.V.S., of Stafford, died on May 20th, aged seventy-nine years. He graduated in 1823, and was consequently one of the oldest members of the profession. Enjoying for so long a period the confidence and respect of those who sought his services, and those with whom he associated, Mr. Carless will be much missed in and beyond Stafford. Some years ago he held the office of Vice-President of the Royal College of Veterinary Surgeons.

W. D. Sartin, M.R.C.V.S., Army Veterinary Department, died at sea, on April 4th, while on passage home from active service in Natal. He was only thirty-three years of age, and graduated in 1869. His demise is much deplored by many friends, in and out of the department.

We have also to announce the death of an Honorary Associate of the Royal College of Veterinary Surgeons, Professor Dr. Haubner, Director of the Dresden Veterinary School, and one of the most eminent Veterinarians in Saxony. He was the author of several valuable works on Veterinary Medicine and Agriculture, but perhaps the most notable of these is his treatise on "Veterinärpolizei." He was also distinguished as a teacher.

Army Veterinary Department.

Gazette, April 19th.

Veterinary Surgeon A. D. Drake resigns his commission.

Gazette, May 7th.

Veterinary Surgeon on probation, S. M. Smith, to be Veterinary Surgeon.

Gazette, May 19th.

Veterinary Surgeon S. W. J. Slattery resigns his commission.

Notes and News.

ANIMAL VACCINATION.—We learn from the *South Australian Press*, that Mr. Chalwin, M.R.C.V.S., has done excellent service in Adelaide, by introducing the system of cultivating vaccine lymph on calves, and that the great public benefit he has thus been able to confer is fully recognised. Our excellent colleague, Graham Mitchell, F.R.C.V.S., was the first to introduce this lymph cultivation into Victoria.

RABIES IN PARIS.—In his report for the past year on the subject of Rabies in dogs, the chief veterinary surgeon to the Paris Prefecture of Police states that that disease has increased in an alarming manner. During 1881, 615 cases of mad dogs were reported, while 733 animals and 153 persons were bitten by them. Of the latter, 23 died of Hydrophobia. In the preceding year the number of mad dogs was 297 ; of persons who received bites, 68 ; and of persons who died of Hydrophobia, only five. In view of this increase, the Council of Public Health has submitted to the Minister of Commerce a new and more stringent code of regulations to be observed by dog-owners.

VETERINARY HONOURS.—At its sitting on April 11th, the Academy of Medicine of Paris elected as foreign corresponding member in the third division (Veterinary Medicine), Professor Thiernesse, director of the Brussels Veteri-

nary School. The other candidates proposed were Mr. Fleming, English Army Veterinary Department, and Dr. Röll, Counsellor of State and late director of the Vienna Veterinary School. Professor Colin, of the Alfort Veterinary School, has been elected an honorary member of the Royal Academy of Medicine of Belgium. Professor Wirtz, director of the Veterinary School at Utrecht, Holland, has received from the faculty of the University the title of Doctor in Medicine, *honoris causâ*. Professor Franck, of the Munich Veterinary School, has had the title of Doctor of Medicine conferred upon him by the University of that city, in recognition of the value of his work on Veterinary Anatomy. Mr. Fleming, Army Veterinary Department, has been elected a corresponding member of the Reale Societè Nazionale di Medicina Veterinaria, and Accademia Veterinaria, of Italy.

Correspondence, etc.

THE ARMY VETERINARY DEPARTMENT.

SIR,—After reading Inspecting Veterinary Surgeon Meyrick's letter in the March issue of the Journal, I cannot refrain from making a few remarks (if your space will allow me) on the travelling duties of a veterinary surgeon who may be unfortunate enough to be posted to a station where he has to make inspections of surrounding stations regularly. I can well sympathize with the veterinary surgeon who wrote home to a friend of Mr. Meyrick's, regarding his three weeks' tour of duty, travelling; for I have been similarly situated on several occasions; and I submit that it is very hard lines to have to resort to your sowcar (money-lender) to borrow money to go on Government duty with, which must be the case: say you start in the middle or near the end of the month, or in fact any time; for he is a fortunate man who can have any balance in hand of his last month's pay; and even supposing he had, it does not appear a very satisfactory way of investing his savings. This matter surely deserves consideration. I travelled over 400 miles of road, in bullock carts, etc., and about 500 miles by rail, on my inspection tour; have been delayed on the road from defective dâke, wheels coming off, bullocks dropping down, and in some cases, never to rise again; and have been compelled to wait at a beastly bungalow where you get the quintessence of abominations in the shape of food, and pay a higher price for it than in the best hotel in London, not forgetting that you are enjoying all this fun on borrowed money. I have met in my travels, and conversed with parsons, doctors, engineers, etc., on duty, but always found that they had travelling allowances and a per centage per mile for their trouble, whilst I was only provided with a piece of paper, and in the performance, probably, of not less important duty. I am thankful to say that I have left that station, with a most vivid reminiscence of my last travelling tour of inspection, being upset in a gharry down an embankment of some twenty feet, the ponies having been frightened and run away. I was out in the sun in the middle of the day, the heat most appalling, waiting for assistance to get the gharry up the embankment, for which, of course, I had to pay. I got a very bad attack of fever on the journey after this mishap, and went on travelling till I reached a large station on the rail, where I went to a hotel and remained a few days until I was fit to continue my journey. The hotel bill amounted to something like Rs. 50. To return to Mr. Meyrick's excellent and truthful (if not underrated) state of the Veterinary Department in India: I was conversing with a Colonel, a friend of mine, who was in the Adjutant-General's office in Madras for some years, on the proposed new scheme of reduction, and he was simply astonished, and said, "After so many years we have been fighting for more men in the Veterinary Department, and now they want to reduce them! It seems very odd."

The remedy, "*vis unita fortior*," is, or should be, in our own hands; and not to make any demonstration against such a preposterous scheme, would not be treating the profession with the honour and credit due to it in its present enlightened condition. The Medical Department never submits to any scheme prejudicial to its interest, but stands firmly and determinedly, and is assisted by the different teachers of the medical schools, and the result is it has got what it demanded. What is to prevent our doing the same? If the Indian Government is anxious to establish a Veterinary Department of its own, it must hold out inducements more compatible with the climate and duties required of its officers.

If it is necessary for a European officer of the Indian Medical Department to have his twelve months or two years furlough to England, after a certain number of years' service, would it not be also advisable for a veterinary surgeon, under similar circumstances, to have furlough, there being no anatomical or physiological difference in officers of the two departments? However, as Mr. Meyrick very rightly observes, it is with great difficulty a veterinary surgeon can even get his two months' privilege leave, which he is entitled to. I have already occupied too much of your valuable space, but I trust not altogether in vain. Yours faithfully,

India, *April 5th.* ——— "RAMASWAMY," A.V.D.

THE PARTIALITY OF HORSE-DEALERS.

DEAR SIR,—Your correspondent, "W.," has put a pertinent question to the profession which should be answered; but as I do not happen to have the *luck* to be a dealer's *favourite* veterinary surgeon, I fear my answer will prove one-sided. Dealers are sure to have their favourite professional men, and they are quite justified; but they are not justified in refusing any qualified man, from an intending purchaser, examining any horse on their premises.

The purchasers are deeply to blame if they do not insist on their own veterinary surgeon conducting the examination; if they are careless of their interests, who is to help them? The dealer's favourite "vet." does his best for both parties—no enviable task, I should think, and but few are equal to it.

Many purchasers are most undesirable, dissatisfied, and fidgetty clients, and any conscientious veterinary surgeon would rather be without them; such are quite as well in the hands of the dealer's *favourite*. I speak advisedly. Whereas I have met with clients whom it has been a delight to serve, I have met with others whose deportment and suspicion have been almost painful; so that, what with the dealer's unpleasant observations when a horse is rejected, and the *conduct* of the buyer, the duty of the veterinary surgeon of independency is no sinecure. I will mention one instance:—Last October a well-known dealer drove over to me, and solicited my service in the examination of a pair of valuable carriage-horses for a purchaser, an entire stranger to me. Well, I examined the pair, and I frankly told the purchaser the animals were not sound, but practically, for the special use he required them for, they would prove serviceable animals. Whilst the purchaser stepped aside to speak with his friend, the dealer put on the peculiar *dealer's glance*, and said, "You have spoilt the deal! You have said too much!" Eventually the pair was purchased, and I never heard a word about the animals until April 10th last, when I received the following letter:—

"The Fen, Esher, April 8th, 1882.

"Sir,—If you will take the trouble to look at your note-book, you will see that on October 4th last you examined for me at —— a pair of black geldings.

"The one with brown muzzle, five years old, had heat in his near foreleg and foot, on and off, for some time, no doubt from the splint. I used to put on a hot bandage, nothing else; that has now quite subsided. His feet are rather brittle, the crust is thin, and the growth very slow. I

have been using lately three parts of oil to one part of oil of tar, and the smith thinks the nails drive better.

"The other one, two white hind fetlocks, six years old, you said had coarse hocks; he keeps quite sound. The only thing at all suspicious is that he is fond of standing with his hind legs at that place in his box where the straw is thickest, so as to get them raised; but this may be, and I think is, only a habit. I trouble you with this because, as you kindly gave me your opinion about them, you may like to know that your judgment has proved to be correct. They are both of them very nice horses in every respect.

"I am, sir, yours faithfully,

"To Mr. R. Ward, F.R.C.V.S., "HENRY TRUEMAN.
"London, W."

The letter speaks plainly that I did my duty for a fee from my client, and the result has proved satisfactory.

Maybe the dealer considers I am a *dangerous examiner*. Be this, however, as it may, he has not sought my service since that date, but he *has not* forbidden me access to his yard and stables.

In the examination of horses there is such a wide difference of opinion, that in my judgment it matters little to the purchaser whose opinion he takes. I have ridden horses in the Row, on the road, and in the field. I have passed such animals, and a week or so after I have heard that a brother practitioner has discovered lots of unsoundnesses. I have again sought them, and failed to see them. How is this? I have been requested to examine a horse, and I have found unsoundness palpable, and I have been informed such animal was passed just before!

The client frequently is niggardly, and wants an examination for half-a-guinea fee, no matter how much he is giving for the animal, thus tempting a needy practitioner to become a dealer's *favourite*.

By induction, the cause is the purchaser's indifference to his own interest on the one side, and the dealer's attention to his own on the other side.

I am, faithfully yours,

London, W., *May 12th*, 1882. ROBERT WARD, F.R.C.V.S.

SEWAGE FARMS.

DEAR SIR,—I should very much like to know what are the views held by some of your correspondents in reference to the feeding of animals upon grass, etc., grown upon "sewage farms."

The following case seems to indicate that it has a bad effect. A cow belonging to a veterinary surgeon, some distance from here, had been feeding upon a grass paddock adjoining the house, during which time the milk given, and butter made therefrom, was of the finest quality. This gentleman, thinking that he would prefer to save the grass, so that he could have some hay for his hackneys, shut the cow up in a shed, and gave her grass obtained from a sewage farm, feeding her entirely upon it. The milk and butter gradually assumed a peculiar and most disagreeable smell and taste; so much so, that the members of his household could not consume them. The cow does not appear unwell, although she does not appear to be in such good spirits as previously. I may state that my knowledge and natural inclination have always been directed to horses. You may therefore understand why I merely give the *facts* as I know them, and refrain from making any comments upon them. I was attending a horse, some days back, upon a sewage farm, when a man upon the farm informed me that they often had as many as five crops of Italian rye-grass during the year. Awaiting some information in reference to the above matter, I am, sir,

Yours faithfully,

"EPSOM."

NEW REMEDIES.

SIR,—"Pharmakon," in your last issue, draws attention to the manner in which new remedies have been lately introduced to the profession, and enumerates Chlorodyne, Pulv. Iodoformi Co., and Mist. Tonica Conc. as examples; but more especially makes my recent article on "The Tonic of the Future" the subject of his letter.

With the introduction of the three remedies first mentioned it is needless to say I have nothing whatever to do; but having an honest impression that the "Mist. Quinquiniæ Comp." deserved a special notice, and that the profession, generally, would be benefited by such a notice, I sent you the article in question with all sincerity of purpose, and in absolute good faith, the desire to *puff* the preparation being entirely absent from my mind.

Here was a tonic I had given a careful trial to in many cases, with absolute success, and when compared with the many unreliable tonics—compound and simple—hitherto used, it stood out as a combination truly valuable. I maintain that I was perfectly justified in calling special attention to it through your valuable columns. Many a time and oft have I seen similar articles in the *Lancet* and other medical periodicals; why, therefore, should exception be made to their insertion in a veterinary journal?

Perhaps "Pharmakon's" small experience (for he kindly tells us that he is an assistant) has been such that he has rarely been in want of a tonic; the opportunity of exercising his talent in "combinations" might not have been often given him, his employer, perhaps, having preferred to look after serious cases himself. If this should turn out to be so, his never having experienced any difficulty in finding the *very* tonic that pulled his patient through is easily explained.

If, on the other hand, he has *had* experience of serious cases, and never felt the want of a reliable and efficacious tonic, why, then, all I can say is, that he is a very lucky man, and as such stands alone in the profession.

"Pharmakon's" sneers about a man of "long and active practice" ever being at a loss for a tonic, and his question as to whether I never tried combinations, I pass as being utterly beneath my notice, merely adding that I have not the slightest doubt, but that I prescribed combinations, *secundum artem*, when "Pharmakon" was at his mother's apron-strings.

As to the cases mentioned in my article existing only in imagination, I am truly sorry that a member of an honourable profession has been found capable of insinuating such a scandal on another member of that profession, especially when the latter is an entire stranger to him; and before he so commits himself again I should suggest he should bear in mind the motto, "Honi soit qui mal y pense." Luckily, the Saint Bernard case occurred in the town of Romsey, and the dog being the property of Mr. Purchase, a well-known resident, the history of the case became the common property of a number of the inhabitants.

The other cases can also be equally well testified to.

With reference to the foot-note appended to "Pharmakon's" letter, as to whether the preparation referred to by me is identical to the one examined by him, I can only say that the Mist. Quinquiniæ Comp. is made and was supplied to me by Messrs. Mackey, Mackey and Co., of London, whose names appear on the label upon the bottle. Whether the preparation analysed has the label of this firm or not can easily be determined by "Pharmakon" himself.

As to the unknown composition of these "new remedies," "Pharmakon's" argument against them utterly fails as regards Messrs. Mackey's preparation, inasmuch as the formula is fully set forth on the label.

"Pharmakon's" next paragraph points the moral of my article, as to the usefulness of the quinquinine mixture to a degree. He says, "If a man can

diagnose a case, surely he possesses sufficient therapeutical skill to decide as to the course of treatment indicated, and if necessary to advantageously combine the therapeutic agents he may select to administer."

Here, then, is where the preparation under notice steps in and does its work, whereas the old "combinations" (I dare say as skilfully and compatibly prescribed as "Pharmakon's" would be) so often failed; and I have no hesitation, whatever, in saying that to veterinary pharmacy its introduction was a positive gain.

Before writing down an article on any preparation written in good faith and with the best intentions towards the profession, I am of opinion "Pharmakon" would exercise much better taste were he first to test the merits of the preparation practically.

His remarks *pro* or *con* would then have some intrinsic value, whereas his letter as it now stands is unfair, egotistical, unjust, and *argumentum ad ignorantium*.

In conclusion, may I ask what authority "Pharmakon" has for giving the Greek alphabet an extra letter? In my school-days there never used to be a "C." He will notice I have substituted "K," as being the proper letter to be used in spelling the *nom de plume* "Pharmakon."

Very faithfully yours,

Romsey, Hants. WM. MAYNARD, JUN., M.R.C.V.S.

DEAR SIR,—"Pharmacon" has, in my opinion, done his profession a good service, for I am convinced that right-minded men must feel deeply humiliated when reading the "extol" of an M.R.C.V.S. on some new nostrum of uncertain composition, to say the very least. The appearance of so many of these *panaceas* of late years, the introductions of many chemists and druggists, should not be encouraged by the *duly qualified*; for if the *duly qualified* is unable to prescribe for his patient, he should *keep it dark*, rather than advertise his inability to adjust pharmaceutical agents to form a suitable *medicamentum*. By inadvertence, a member may puff a nostrum, but it is quite inexcusable when it is done with persistency; I hope this excuse will obtain here, out of respect to the profession, and you, sir; for have you not been trying to raise the profession, down the throats of scientific bodies lately, asserting that we are *scientific* too? I will not say more, for I am sure the *dose* will act "*quantum satis*." Thanking "Pharmacon,"

I remain, faithfully yours,

London, *May 8th*, 1882. ROBERT WARD, F.R.C.V.S.

"THE TONIC OF THE FUTURE."

DEAR SIR,—If it will interest "Pharmacon," I may tell him that I can endorse Mr. Maynard's high opinion of the excellence of the Mist. Quinquiniæ Co., as sent out by Messrs. Mackey and Co.

In my practice it has proved itself of the greatest value in several cases of Typhoid Influenza, and Purpura Hæmorrhagica.

As a preparation of known composition, I, for one, can fully appreciate it as a "handy remedy," and thank Messrs. Mackey and Co. for introducing it. I cannot but think the preparation "Pharmacon" examined was not the "Tonic of the Future." I enclose my card, and remain, dear sir,

Yours faithfully,

M.S.C.V.M.A.

DEAR SIR,—May we be allowed to briefly state, in reply to "Pharmacon's" question, that the preparation forming the subject of Mr. Maynard's article in your April number, was our Mist. Quinquinine Comp.; that it is guaranteed

to contain what it professes to do, viz., Quinquinine, Dialyzed Iron, and Tinct. Nux Vomica; and being a preparation with scarcely a trace of free acid, we conclude that the Tonic Mixture examined by "Pharmacon" was not ours.

The Mist. Quinquina Comp., and all our veterinary specialties, bear our name and address on the labels; hence "Pharmacon" can easily satisfy himself on the question of whose preparation Mr. Maynard wrote about.

If "Pharmacon" will do us the favour to accept a bottle of the Quinquinine Mixture for trial and analysis, we shall be glad to send it, carriage paid (under cover if he wishes) to any address

Bouverie Street, Fleet Street,
London, *May 13th.*

Your obedient servants,
MACKEY, MACKEY, AND CO.

THE BOARD OF EXAMINERS.

SIR,—At the last meeting of the North of England Veterinary Medical Association, Mr. Morgan read an essay on the above subject, in which he very properly drew attention to the manifest absurdity of employing medical men as examiners, and paying large fees, when so many and much more efficient men can be found *for the purpose*, in our own ranks, who would only be too glad to be allowed the honour without fee or reward. I say more efficient, for can doctors compare with us in knowledge of frogs, bars, laminæ, navicular bones, the cartilago nictitans, etc.; and what is more important than the anatomy of the foot? The rank and file of the profession are, or soon will be, in front of those at head-quarters, in their respective functions, if these old-fashioned and extravagant ways continue. It has been said that many of us would soon work ourselves up, if we had an opportunity of ever becoming examiners. I refute with scorn the imputation that there are not those amongst us, of first-class social and professional status, in a constant state of preparation, and competent to take any chair, even to that of chemistry, with honour and credit to themselves and the profession.

It is quite a mistake to allow a few men to absorb all the posts of honour, and that members of council should be examiners also. Let the two be separate. Let the profession elect the examiners, as it elects the council, or if need be let the council elect the examiners, but keep the offices distinct. Our president says that three examinations in the year would be too great a tax upon honorary examiners from our ranks. I say they would regard the honour so highly as to make any sacrifice, for would they not have their reward in enhanced professional status, and the prestige conferred by the distinction? If I have too exalted an opinion of the élite of our profession, surely if we must needs *pay*, such distinguished men as the late Professor Varnell, Professor Simonds, Professor Pritchard, and Mr. J. H. Steel, can well and worthily occupy the Doctors' chairs, and make us independent of the extraneous aid which is such a reproach to us.

May I digress for a moment to pay a tribute of praise to a modest, quiet, earnest worker whom, unfortunately, ill-health has compelled to retire? I mean our genial and able late Principal, Professor Simonds. Few are aware of the immense service done to the profession by the Father of Cattle Pathology, in his lectures to the Royal Agricultural Society, which did wonders in elevating the veterinary surgeon in the eyes of the higher agricultural world. Those of my contemporary students who heard him so eloquently descant upon his personal experience of Rinderpest on the Steppes of Russia, little thought we should know it so well in twelve months, and see his warning words to the Government pass unheeded by.

Rabies.

A correspondent, presumably a lay one, in the April number of the VETERINARY JOURNAL, questions the correctness of Mr. Leeney's figures as

to the number of cases of the above-named disease, occurring in his practice within a comparatively short time, and he does so on the ground of Hydrophobia not having been shown by statistics to have prevailed extensively in Brighton. Now in my experience of about a dozen cases, in as many months, dogs do not develop marked ferocity towards man, but they *do* towards other animals, and more particularly towards their own species, which is the earliest symptom. I have only had one case in which a person has been bitten, and that person was a lady, the owner of the dog. She was bitten in the calf of the leg, through her stocking, and having been instantly cauterized, has happily taken no harm as yet. I have no doubt Mr. Leeney is quite correct, for that gentleman, with characteristic generosity, invited me, in common with some other opponents, to see cases at his infirmary, of which we gladly availed ourselves. Mr. J. W. Hill contends that a chair of canine pathology should be established. I, too, think the diseases of dogs should be more fully entered into at College, for we are often called upon to treat dogs of priceless value in their owner's eyes. Mr. Morgan points out that the examinations for the ten years ending 1880 cost £6,000, yet we cannot buy a little property for head-quarters, or afford efficient instruction to our students. Surely sweeping reform is wanted in high places more than in the rank and file of our profession.

I am, yours, etc.,

Brighton, *May 4th.* A. METHERELL, M.R.C.V.S.

OWING to the heavy demands on our space this month, a number of communications and reports of proceedings of societies are held over until next month.

Communications, Books, Journals, etc., Received.

Communications have been received from A. Metherell, Brighton; J. B. Wolstenholme, Manchester; J. J. Philips, A.V.D., Bareilly; G. H. Fenton, A.V.D., Secunderabad; "Pharmacon"; T. Chalwin, Australia; A. Smith, Ontario; R. Rutherford, Edinburgh; A. Broad, London; R. W. Burke, A.V.D., Woolwich; "Ramaswamy," A.V.D., India; T. Campbell, Kirkcudbright; A. W. Hill, London; R. Ward, London; W. Fream, Downton; M.S.C.V.M.A.; C. F. Hogben, Dover; T. Greaves, Manchester; W. Maynard, Romsey; T. H. Lewis, Edinburgh; Mackey, Mackey and Co., London; G. C. Hill, London; W. Broughton, Leeds; "Epsom"; J. I. Sperring, Dublin; J. H. Cox, A.V.D., Aldershot.

BOOKS AND PAMPHLETS: *H. A. Albut*, The New Handbook of Dosimetric Therapeutics; *C. A. Gordon, M.D.*, Remarks on Experimental Pharmacology; *N. E. Forssell*, Berättelse öfver Kongl. Veterinär-Inräthingens i Skara; *U. Laho*, Observation relative a un Monstre Diphallien; *C. Siegen and E. Semmer*, Maladies Infectieuses Consécutives au Traumatismes; *C. A. Lindquist*, Tidskrift für Veterinär-Medicin och Husdjursskötsel; *J. M. Wehenkel*, Etat Sanitaire des Animaux Domestiques pendant l'Année 1880; Report of the Minister of Agriculture for the Dominion of Canada; *D. McAlpine*, The Botanical Atlas; *D. McEachran*, Notes of a Trip to Bow River; *C. F. Muller*, Der Ausbruch der Rinderpest in Schlesien; *C. Gresswell*, Comparative Pathology.

JOURNALS, ETC.: *Journal of the Royal Agricultural Society; Annales de Méd. Vétérinaire; La Clinica Veterinaria; Journal de Médecine Vétérinaire et de Zootechnie; l'Echo Vétérinaire; Revue Vétérinaire; Lancet; Medical Press and Circular; Der Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; Sanitarian; Archives Vétérinaire; American Live Stock Journal; Recueil de Méd. Vétérinaire; Edinburgh Medical Journal; Agricultural Gazette; La Presse Vétérinaire; Australasian Veterinary Journal; Breeder's Gazette; British Medical Journal; Mark Lane Express; Veterinary Review; Journal of Medicine and Dosimetric Therapeutics; Journal of Comparative Medicine and Surgery; Live Stock Journal; Field; Land and Water.*

NEWSPAPERS: *South Australian Register; Irish Times; Freeman's Journal; Scotsman; Glasgow Herald; Kentish Observer; Times; Broad Arrow; Kentish Gazette; Lahore Civil and Military Gazette.*

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